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Newsprint Committee Reports Its Progress

WASHINGTON — More newsprint in the next several months, and a declining trend in newsprint prices were forecast by the House Committee on Newsprint and Paper Supply, in an interim report on the investigation into paper shortages filed with the House this week, by the chairman, Rep. Clarence J. Brown, Rep., Ohio.

"The Committee is especially happy to report that since its organization, it has been helpful in bringing about an expansion in newsprint production of approximately 450,000 tons per year, and at the time of preparation of this report, there is a strong probability that some 200,000 tons of additional newsprint production capacity will be arranged for in the next few months," Mr. Brown reported.

"Some 200,000 tons of this increased production is expected to begin to reach American markets late this year or early in 1948, with the balance available in late 1948 or early 1949," his report continued.

On prices, Chairman Brown reported:

"It is the conclusion of the Committee that newsprint and paper prices are already at their peak. Manufacturers' earnings are especially good at the present time, and the Committee can see no justification for any further paper price increase. Instead, it is the belief of the Committee that if there are any changes in paper prices during the next few months that they should be lower rather than higher."

The report expressed the opinion that "the greatest opportunity for increasing newsprint production in the United States can be found in the Southern states, where plentiful wood supplies are available."

It also suggested the possibilities of developing new supplies from new mills and production in the wooded sections of the Rocky Mountain area, and added that Alaska has vast timber resources that "may prove to be an important source for future paper supply."

The Committee has not studied the latter area closely, however, it was said, but "is greatly impressed with the need for increasing newsprint and paper production here in the Continental United States" as a means of making the country self-sufficient in event of future emergencies.

The Committee plans to continue its work, Mr. Brown said. In the future plans are for a conference this Autumn with Canadian officials in Canada, on newsprint and paper supply matters, and in the next session, expects to go into more detail as Alaskan possibilities.

A number of new possibilities also will be examined by the group, such as the de-inking and re-use of waste paper, and possible use of Southern scrub oak as a paper material.

Stationers Cut Inventories Reporting Excess Items

CHICAGO—The Stationers Club of Chicago held its regular monthly meeting at the Merchandise Mart on Monday evening, July 21. About fifty members and guests were present, including guest Harry Short of the Columbia Art Works, makers of calendar pads and tablets. Most of the meeting was devoted to a round table discussion of problems and chief interest centered in the program to barter excess inventory items through the simple process of letting the other fellow know what you have too much of with the thought that he might need it for his own trade. The trimming away of excess items on this basis has considerable possibility, according to local members of the Club, in keeping inventories in better shape and in helping the "other fellow."

The local Club plans to have a convention headquarters during the annual convention of the National Stationers slated for Chicago late in September. The organization, under presidency of Harold Rossuk, expects to get a bit of publicity for its own efforts and to meet the heads of similar groups in other cities with the idea of expanding its own program locally.

Waste Dealers to Meet October 4 at Atlantic City

NEW YORK — The National Association of Waste Material Dealers, Inc., has completed arrangements for a streamlined fall convention to be held on October 4, 5 and 6, 1947, at the Ritz-Carlton Hotel, Atlantic City. Most of the business sessions will be held on Monday, October 6th. The outstanding social feature will be a very enjoyable cocktail party and dinner-dance to be held on Saturday evening, October 4th.

Canada Awaits News of British Slash

TORONTO—Up until mid-week no official advice had been received by newsprint representatives here concerning the possibility of a cut back in newsprint orders by the United Kingdom. In a London despatch last week Lord Ammon was quoted as stating in the House of Lords that newsprint imports would be cut back 48,400 tons in the next six months.

At the beginning of 1947 it is reported Canadian and Newfoundland newsprint commitments to the United Kingdom were in the neighborhood of 150,000 tons for the full year. Of this amount, Canada was to supply 104,000 tons. Up to the end of May this year, exports of Canadian newsprint to the United Kingdom totalled 16,979 tons. From this the unshipped balance at the end of May was about 87,000 tons. Assuming 7,000 tons were exported to the United Kingdom in June, this would still leave 31,600 tons to be shipped in the rest of the year.

Canadian newsprint representatives, however, although they do not know just what the score is at the moment, do not seem to be particularly perturbed about the situation. Naturally, they are in full sympathy with the critical position of the United Kingdom respecting her diminishing supply of dollars and since the newsprint represented by any cut back in the United Kingdom shipments could probably be diverted to other sources of newsprint need, there does not appear to be any great need for anxiety.

Mando Nearly Trebles Its Six-Months Net

TORONTO—Consolidated net income of Minnesota & Ontario Paper Company was $2,635,775 for the six months ending June 30, 1947, after provision for income taxes and other reserves. This is up 163 per cent above the $1,004,414 for the same period in 1946.

This is equivalent to earnings of $1.96 a common share in the first six months of 1947 as compared with 75 cents for the similar 1946 period and with $1.69 a share for the whole year 1946.

Net sales for the first six months of 1947 were $23,878,413—over 61 per cent above the $14,809,317 sales for the same 1946 period.

Marathon Establishes Six Regional Offices

MENASHA, Wis. — Regional sales offices, in six principal market centers of the United States, have been established by Marathon Corporation. Regional sales managers, appointed several months ago, will be in charge of these offices and will coordinate and direct all the company's field selling activities in their respective areas. A. W. Stompe, Marathon's general sales manager, stated that the purpose of the move is to make field selling operations more efficient by providing, through regional supervision, close contact between the company's home office and its customers in varied branches of the food processing and food distributing business. Marathon has 95 field sales representatives in bakery, food packaging, stock products and specialty packaging sections.

Mr. Stompe's statement emphasized that the opening of the new offices does not change in any way the company's established field selling methods and policies. "The regional offices and their managers have but one objective," he said, "and that is to make it easier for Marathon's customers to do business with us."

The regional managers, all experienced Marathon sales representatives, and their office locations are: EASTERN REGION — R. A. Nash, manager, 52 Vanderbilt Avenue, New York 17, New York; SOUTHERN REGION — Walter Evans, manager, Palmer Building, Atlanta, Georgia; EAST CENTRAL REGION — Ed Morgan, manager, Perry Payne Building, 740 Superior Street, N. W., Cleveland, Ohio; CENTRAL REGION — W. Roy Welch, manager, 1919 Conway Building, 111 W. Washington Street, Chicago, Illinois; SOUTHWESTERN REGION — H. E. Pierce, manager, Porter Building, Room 820, 406 West 34th Street, Kansas City, Missouri; WESTERN REGION — Hugh Hicks, manager, 101 Harrison Street, San Francisco 5, California.

Kimberly Picnic Program Is Full of Entertainment

NEENAH, Wis. — Among the major shows in the afternoon and evening of August 3 at the annual picnic for Kimberly-Clark Corporation employes and their families at Riverside park here will be harmonica numbers by Agnes and Bob Ballantyne of NBC; the appearance of Randy Brown, known as the world's champion paddle ball artist; and Martin Barnett, magician. Ponies will be on the grounds for the children, and a German band will be on the grounds during the afternoon and evening.

The Kimberly-Clark Activities Association is making arrangements for the picnic. A free dance will be held from 9 o'clock Sunday evening to 1 o'clock in the morning. Baseball games, tugs-of-war and contests for the children also are included.

Holyoke Mills Resume After Vacation Shut-down

HOLYOKE, Mass. — Holyoke's paper industry is rolling again after a two-week holiday.

The most extensive cessation of manufacturing operations in Holyoke has concluded with the end of the two-week vacation and work has resumed. Most plants gave two-week vacations with pay to all employees and this year instead of applying a stagger system and keeping the plants running partially, most of them closed.

According to reports, orders piled up during the two-week vacation and the mills are set for full-time operations for some time to come.

Marathon regional managers at a recent sales conference. Left to right, standing: E. H. Morgan, Walter Evans, H. E. Pierce, R. A. Nash, Hugh Hicks. Seated: A. W. Stompe, general sales manager; W. Roy Welch.

Abitibi Guarantees 10 Months Bush Work

TORONTO—A guarantee of 10 months' employment in the Ontario bushland at prevailing wage rates has been given the 1,500 displaced persons in Europe who are arriving in Ontario early next month for work in the bush. This was announced by the Abitibi Power and Paper Company.

Under the arrangements concluded between the Federal Department of Mines and Resources and the companies employing the men, the new arrivals will be entitled to all the benefits enjoyed by Canadian workers.

Of the 1,500 men, 600 will be employed by the Spruce Falls Power and Paper Co., 500 by the Abitibi Power and Paper Co., and 400 by the Great Lakes Paper Co.

The displaced persons were selected by representatives of the pulp and paper industry in cooperation with federal authorities and the inter-governmental committee on refugees. They were picked on the basis of physical and moral fitness, experience and other requirements.

"One of the primary requirements set out by the government representatives was the fitness of the displaced persons to become good Canadian citizens," the Abitibi statement said.

Each of the displaced persons will be given an individual contract by the respective companies. These will be the same as the agreements between the companies and the federal government.

Terms of the contracts were translated for each man into his native language to avoid misunderstandings.

"It is of the individual's own free will that he enters into contracts with the companies concerned. The entire procedure, including the contract form, has been under supervision of the federal government," the announcement said.

A representative of the pulp and paper industry pointed out that the average earnings of piece work cutters during the 1946-47 season exceeded $8 a day, while experienced wood cutters earned in excess of $11 a day.

"There is an urgent need for men in the bush," said D. W. Ambridge, president of the Abitibi company. "These new arrivals are just a drop in the bucket compared to the number required to keep pace with the rapidly increasing demand for men by Canadian forest industries," he added.

Mr. Ambridge noted that within the last few months many young Canadians and a few Americans have been showing greater interest in bush work.

Mary O'Connor Named Office Manager

CHICAGO — Miss Mary F. O'Connor has recently been appointed office manager of the newly opened South side branch and warehouse of the Jonassen Paper Company.

Ralph Morgen Heads Experiment Station

GAINESVILLE, Fla.—Appointment of Dr. Ralph A. Morgan as director of the Florida Engineering and Industrial Experiment Station was made known last month by John J. Tigert, president of the University of Florida. Previous to this appointment Joseph Weil served as both dean of the College of Engineering and director of the Station.

Dr Morgan joined the faculty in 1938 as a professor of chemical engineering. In 1943 he was appointed assistant director of the Experiment Station and served in that capacity until being promoted to the position of director.

Prior to his service at Gainesville, Dr. Morgen was consulting chemical engineer and research engineer for industrial companies in Kansas City, Mo., San Francisco, and Chicago. He holds several patents in the chemical field. He received his Ph.D. degree from the University of California.

Dr. Morgen is a contributor to science and trade publications and holds memberships in the A. I. Ch. E., A. S. E. E., American Chemical Society, and Technical Association of the Pulp and Paper Industry.

Dr. William J. Nolan, associate research engineer, has been appointed head of the pulp and paper section of chemical engineering research at the Experiment Station, by Dr. A. Morgen.

Dr. Nolan joined the staff of the University in 1946. From 1938 to 1945 he was an industrial consultant and also a professor of chemical engineering at the University of Maine. He has been associated in engineering positions with several industrial companies in the pulp and paper field.

He is a member of the American Institute of Chemical Engineers and the Technical Association of Pulp and Paper Industry. Dr. Nolan served as a lieutenant in the U. S. Naval Reserve during the war. He received his Ph.D. degree from the University of Michigan.

Anson and Callanan Join Carter Rice

PROVIDENCE, R. I.—Lyle H. Anson and William F. Callahan have been added to the sales staff of Carter, Rice & Co. Corporation, Providence Division, by James T. McGowan, Branch Manager. Mr. Anson has had many years' experience in the paper field, ten of which were with the Kalamazoo Vegetable Parchment Company in the manufacturing department, and seven with the Nekoosa Edwards Paper Company. More recently he was manager of Fine Paper at the Industrial Paper and Cordage Company, Pawtucket. Mr. Callanan joins Carter, Rice after five years in the armed services, and will specialize in fine paper sales.

RALPH A. MORGEN
Directs Florida's Experiment Station

Carthage Friends Fete Loftus on Departure

CARTHAGE, N. Y.—The Carlowden Country club was the scene of a farewell testimonial dinner given for Glendon F. Loftus by his friends and business associates in the Carthage area. More than 125 persons were present at the gathering.

As the highlight of the dinner, Rev. Harold H. Barnard, pastor of the First Methodist church, Carthage, presented Mr. Loftus with a traveling bag as an expression of the friendship of Carthage residents. Mr. Loftus thanked his audience for the gift and told of his regret on leaving a community where he had spent so many "happy and productive years."

Mr. Loftus has served for twelve years as office manager of the Crown Zellerbach corporation, working in the Carthage plant. He is now acting in a similar capacity with the corporation's Washington Pulp and Paper company division, Port Angeles, Wash., a position which he accepted late in May.

Westfield Group Names Casey and James

RUSSELL, Mass. — Westfield River Paper Company, Inc., has appointed R. J. Casey as personnel director of the company, and its subsidiaries, the Mountain Mill Corporation of East Lee and the Glassine Paper Company with mills at West Conshohocken and Manayunk, Pa. Mr. Casey is at present directing his activities from the Glassine Paper Company at West Conshohocken.

Earl E. James has been appointed controller of the company and its subsidiaries. Mr. James is also at present directing his activities from West Conshohocken.

Dyrsmid Advances In Vancouver Post

VANCOUVER, B. C. — A. R. Dyrsmid has been appointed resident engineer for Vancouver operations of Pacific Mills Limited, according to announcement by R. H. R. Young, manager of the manufacturing division of the company. Mr. Dyrsmid was formerly superintendent of the Vancouver converting plant of the company. In his new post he will also include operations of Canadian Boxes Limited under his supervision.

Mr. Dyrsmid joined the plant of Pacific Mills Limited in 1929, coming from Oakland, California, where he was with the Western Wax Paper Company. He assumed charge of the paper converting plant at Ocean Falls at that time, but moved to Vancouver a year later to supervise the construction of the converting plant of the company there. On the completion of this plant, Mr. Dyrsmid became plant superintendent, a post which he has held until his recent promotion.

Mr. Dyrsmid was born in Santa Ana and attended public and high schools in Los Angeles. He was graduated with his M.A. degree in Science at the University of California in 1923.

Succeeding Mr. Dyrsmid as plant superintendent is A. R. "Fred" Webb, formerly assistant superintendent of the converting plant operations in Vancouver.

Mr. Webb originally joined the Pacific Mills organization at Ocean Falls in 1923, and he has in turn served as shift foreman in the old wood splitter mill, as paper maker, converting plant foreman, plant laboratory technician and production superintendent. When Pacific Mills entered the paper converting field, Mr. Webb was one of the original members of the staff in his department and in 1930 was transferred to Vancouver when the present converting plant was built.

National Gypsum Promotes Means and Wagner

BUFFALO, N. Y.—The National Gypsum Company has appointed Richard H. Means to the new position of assistant controller and of Frederick A. Wagner as auditor. Mr. Means has been with the company since 1942 as auditor. He previously operated his own accounting business in Buffalo. Mr. Wagner joined National Gypsum in 1942 as assistant auditor.

Neenah Chamber Elects Brown

NEENAH, Wis.—D. K. Brown, president of Neenah Paper Company, has been reelected to serve as national councilor for the Neenah - Menasha Chamber of Commerce by the directors. His duties include acting as representative between the local board and the United States Chamber.

Alexander Outlines Problems That NEPCO Has Overcome

In a mid-year report to the stockholders, presented at the annual stockholders meeting of Nekoosa-Edwards Paper Company held at the Company offices in Port Edwards, Wisconsin on Wednesday, July 16, president John E. Alexander outlined progress since the last annual meeting and predicted future accomplishments anticipated during the balance of 1947.

Calling the past twelve months the first full year of peacetime operation, Mr. Alexander called attention to the fact that, despite unforeseen difficulties in obtaining materials and equipment to replace or augment machinery strained during the last five years of wartime peak operation, the Company was making outstanding progress in its various major departments.

Discussing Wood Procurement, Mr. Alexander explained that "The present yearly requirements of Nekoosa-Edwards mills are such that under good forest management, with an annual increment of half a cord per acre, and based on a rotation period of fifty years, it would require 360,000 to 400,000 acres of land to produce annually the wood required—an area of roughly 625 square miles."

In addition to extensive logging operations of its own, Nekoosa-Edwards last year purchased 215,600 cords of wood at a cost of $4,309,000, at an average price of $14.82 per cord plus an average of $5.82 per cord transportation. This offers a striking contrast with the 40,400 cords purchased in 1898 at an average price of $3.90 per cord and $1.76 per cord transportation. Wood purchases are made in the Lake states, the Pacific Mountain states and Canada, and private logging operations are carried on in both the Lake states and Canada.

"Our Canadian timber berths are owned and operated by the Alexander-Clark Timber Company Limited," Mr. Alexander stated. "This is a wholly owned subsidiary of Nekoosa-Edwards Paper Company. At present the big part of these holdings are on Sturgeon Lake, Ontario, which has required considerable investment in capital improvements for its development. To transport pulpwood from Sturgeon Lake, Sturgeon Lake Transportation Company was formed. Capitalization of this company was set at $450,000, $300,000 of which is to be borne by Alexander-Clark. Improvements in this area include the building of a railroad, boats for towing pulpwood on Sturgeon Lake, loading equipment, townsite development, etc." Mr. Alexander here mentioned that approximately 15 per cent of Nekoosa-Edwards pulpwood requirements come from Canada, and this percentage is expected to increase.

In addition to the operation of our own woodlands and supervision of pulpwood purchases, the Forestry department operates a huge reforestation project. "As we all know," Mr. Alexander explained in describing this operation, "the enemy of any reforestation project is 'fire,' and in this respect Nekoosa-Edwards has an enviable record since 1926. There was but one fire on Company land in the past year, and the alert crews and fire-fighting equipment limited it to less than five acres in area."

The fire protection system consists of a network of roads, mobile equipment stationed at strategic locations, and an interlaced system of look-out towers all interconnected with telephone communication for quick reporting of smoke. Many hundreds of thousands of trees are planted each year, all pedigreed stock raised in the Company's own nurseries, and results of the past three years show the outstanding survival rate of higher than 90 per cent of the plantings, a record equalled by few other private or public agencies. "As about 40 per cent of our total manufacturing cost is involved in pulpwood, the successful operation of this department is highly important," Mr. Alexander declared.

Another important phase of the operation is the Traffic department. "Our freight bill during 1946 was well over two million dollars," Mr. Alexander declared, "and with the rate increases now in effect it will be considerably higher this year. Freight carloadings in the first five months of 1947 were approximately 16 per cent above those in the same period of 1946."

In discussing Personnel Administration and general employment data, Mr. Alexander pointed out that "While we continue to have a large turnover due to generally unsettled industrial conditions, the situation is definitely improving. There exists an indication of increasing stability on the part of individuals, an important decrease in the rate of absenteeism, and the class of applicants for jobs is of a higher type than a year ago," he declared.

The Nekoosa-Edwards Mutual Benefit Association has been steadily gaining in assets, showing an increase of $15,000 of receipts over expenditures during the last fiscal year. Membership now totals 1130 employees, and the increased revenue due to the expanded membership and increased company contribution has enabled the association to increase hospitalization benefits and add a $500 death benefit to the policy without increase in the premium payments from members. This is in addition to the $1000 life insurance policy given each employe and paid for entirely by Nekoosa-Edwards.

In discussing the Power department with his stockholders, Mr. Alexander pointed to the fortunate situation of the ninth successive year of "water prosperity." "The condition of the watershed area of the Wisconsin river, as controlled by numerous reservoirs in the northern part of the State, has a tremendous influence on our power costs," Mr. Alexander remarked. Nekoosa-Edwards Paper Company is the third largest stockholder in the Wisconsin Valley Improvement Company, and the excellent power conditions maintained by the Improvement Company have been extremely beneficial to the three hydro power developments operated by Nekoosa-Edwards at Centralia, Port Edwards and Nekoosa. Steam production continues to augment hydro power and costs are expected to be further reduced in this department when the new No. 1 powdered fuel boiler comes on the line at Nekoosa in September of this year. Burning nearly 80,000 tons of coal annually, increased efficiency in this department is of vital importance.

One of the few paper mills in the country that entirely owns and controls its own supply of water, Nekoosa-Edwards is entirely and perpetually protected in this respect. "Throughout the year our Nepco Lake produced very nearly 12 billion gallons of water, equivalent to pumping 38 to 40 million gallons of water every twenty-four hours and supplying the needs of our mills," Mr. Alexander explained. "The requirement of pure water from our Nepco Lake property has steadily been on the increase, due primarily to the development and further production of our better grades of paper, demanding higher quality and color.

"The Manufacturing department has done a magnificent job in the face of adverse conditions, not only during the past year but also on the careful planning of improvedments in equipment and expansion," Mr. Alexander stated. The first shut-down since the start of the war occurred early this year, and this was due to a shortage of salt cake and not mechanical failure. Slow deliveries of machinery and equipment have been a handicap in the improvement and construction program, and costs are still rising, but schedules have been met and definite progress is being made. The first stage of the new Nekoosa Bleachery was started early in June, increasing bleached kraft production from fifty to seventy tons per day, and equipment for the remainder of the plant is now on hand or being delivered so that the plant will be completed in the early fall. Various other important technical expansions and improvements have been incorporated into the operation.

Plans were announced to rebuild No. 4 paper machine at the Nekoosa mill this fall, and work is now being done weekends in replacing dryers, drives,

(Continued on page 22)

We would like to help you find new and profitable uses for

AMERICAN ANODE *latices and mixes*

★

MANY seemingly impossible things have been done lately with American Anode latices and mixes. For example, high-altitude oxygen masks with intricate systems of ducts and metal inserts; meteorological balloons that are 5 feet in diameter uninflated, 28 feet inflated, that rise more than 20 miles into the air; amazingly complicated surgical catheters with 3 or more tubes, yet made in one piece.

American Anode latices and mixes are also used as coatings and impregnants for textiles and paper, and as adhesives in a wide variety of applications.

Most of these uses are the direct result of the work done by American Anode development men in our completely equipped development and research laboratory—men with the experience needed to permit us to offer you a *complete* research, design, engineering and production consultant service.

Don't assume that a product can't be made—or a problem solved—with latex until you've consulted with American Anode development men.

Latices and compounded mixes of GEON, HYCAR, Saran, neoprene, crude rubber and GR-S are available. For more information about these modern materials—*and proper methods of using them*—please write Department AD-4, American Anode Inc., 60 Cherry St., Akron, Ohio.

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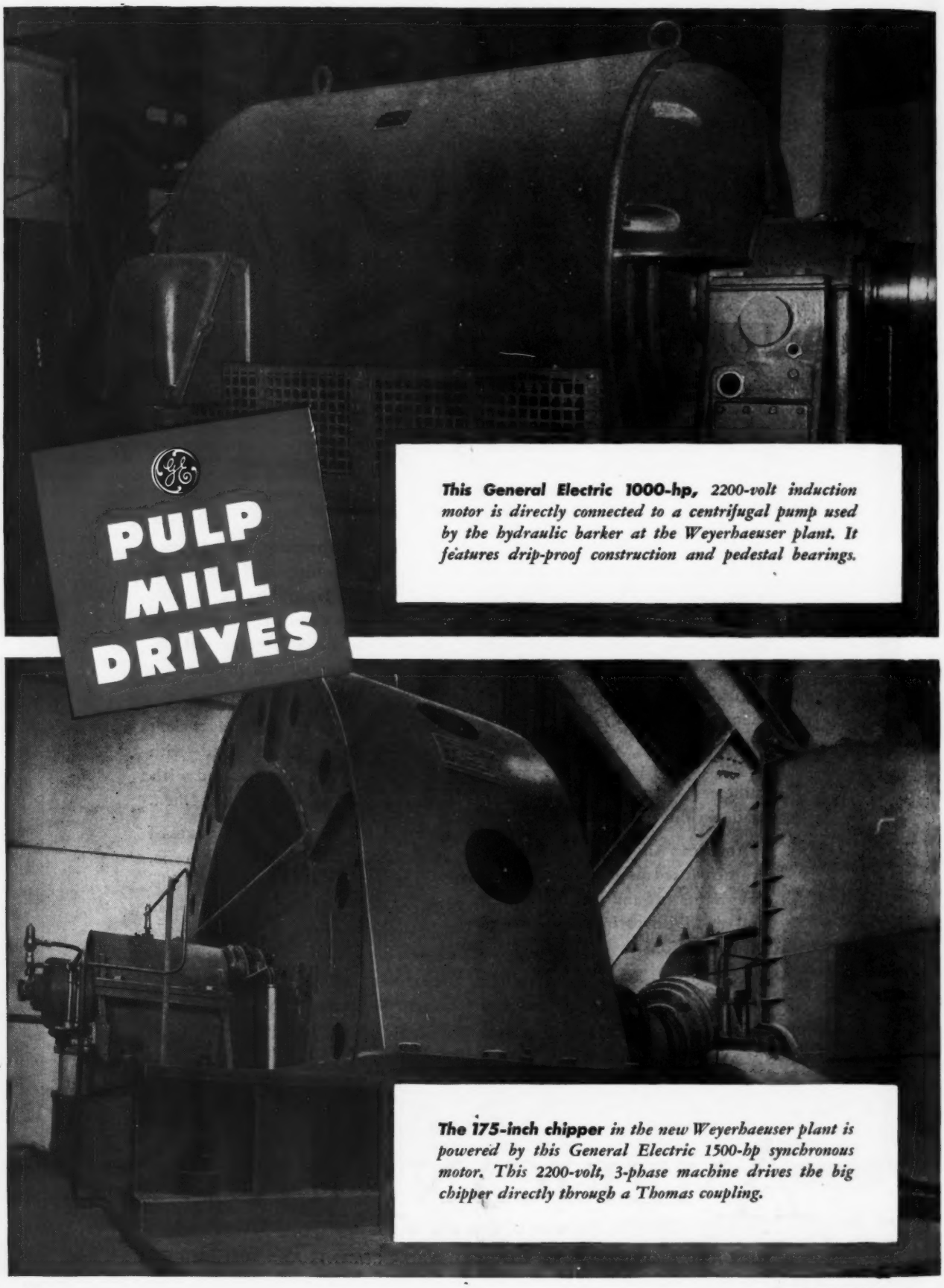
CRUDE AND AMERICAN RUBBER LATICES, WATER CEMENTS AND SUSPENSIONS



This General Electric 1000-hp, *2200-volt induction motor is directly connected to a centrifugal pump used by the hydraulic barker at the Weyerhaeuser plant. It features drip-proof construction and pedestal bearings.*

The 175-inch chipper *in the new Weyerhaeuser plant is powered by this General Electric 1500-hp synchronous motor. This 2200-volt, 3-phase machine drives the big chipper directly through a Thomas coupling.*

uses 4 logs instead of 5

another 20% log saving at Weyerhaeuser

NEW WEYERHAEUSER PLANT *at Longview, Wash., from which debarked logs go to both pulpmill and saw mill.*

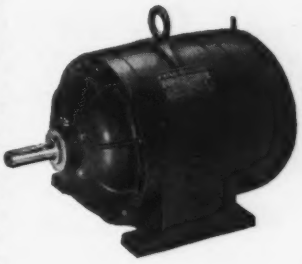
Five years ago, the Weyerhaeuser Timber Company installed a General Electric motor to drive a chipper in its first whole-log pulping plant. The shocks and stresses imposed by the powerful chipper were extraordinarily severe. Yet, year after year, the General Electric motor stood up under those strains. Today, it's still on the job, feeling just as young as ever.

In fact, so convincing was the performance of this motor that Weyerhaeuser management decided to "make it the same" when ordering electric drives for its second whole-log pulping plant. Only this time it was "G.E." all the way—a General Electric induction motor was selected to drive the barker pump, and a General Electric synchronous motor was specified for the chipper drive.

Today, the new pulp plant is turning out the *same amount of pulp from 4 logs where formerly 5 were required*, thanks to the high efficiency of the whole-log barking and chipping process. And Weyerhaeuser feels that a major part in maintaining this high level of efficiency is being played by the G-E motors and controls.

THE TOUGHEST PULP-MILL MOTOR YET!

In addition to big barker and chipper drives, General Electric also makes a complete line of conveyor and pump motors. Newest addition to its family of tough motors for mill service is the new Tri-Clad totally enclosed induction motor, available in ratings from 1 to 1000 hp. It is designed for use in adverse atmospheres—in dampness, out of doors, in corrosive atmospheres. It gives you these important construction features:



- A cast-iron, double-wall frame completely encloses and protects the windings and punchings.
- A nonshrinking compound on motor leads protects motor interior from dust and moisture.
- A rotating labyrinth seal further protects the motor interior from damage by foreign matter.

For complete information on this and any other electric drive you may require, get in touch with your local General Electric office. *Apparatus Department, General Electric Company, Schenectady 5, N. Y.*

GENERAL ELECTRIC

663-27

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In discussing Personnel Administration and general employment data, Mr. Alexander pointed out that "While we continue to have a large turnover due to generally unsettled industrial conditions, the situation is definitely improving. There exists an indication of increasing stability on the part of individuals, an important decrease in the rate of absenteeism, and the class of applicants for jobs is of a higher type than a year ago," he declared.

The Nekoosa-Edwards Mutual Benefit Association has been steadily gaining in assets, showing an increase of $15,000 of receipts over expenditures during the last fiscal year. Membership now totals 1130 employees, and the increased revenue due to the expanded membership and increased company contribution has enabled the association to increase hospitalization benefits and add a $500 death benefit to the policy without increase in the premium payments from members. This is in addition to the $1000 life insurance policy given each employe and paid for entirely by Nekoosa-Edwards.

In discussing the Power department with his stockholders, Mr. Alexander pointed to the fortunate situation of the ninth successive year of "water prosperity." "The condition of the watershed area of the Wisconsin river, as controlled by numerous reservoirs in the northern part of the State, has a tremendous influence on our power costs," Mr. Alexander remarked. Nekoosa-Edwards Paper Company is the third largest stockholder in the Wisconsin Valley Improvement Company, and the excellent power conditions maintained by the Improvement Company have been extremely beneficial to the three hydro power developments operated by Nekoosa-Edwards at Centralia, Port Edwards and Nekoosa. Steam production continues to augment hydro power and costs are expected to be further reduced in this department when the new No. 1 powdered fuel boiler comes on the line at Nekoosa in September of this year. Burning nearly 80,000 tons of coal annually, increased efficiency in this department is of vital importance.

One of the few paper mills in the country that entirely owns and controls its own supply of water, Nekoosa-Edwards is entirely and perpetually protected in this respect. "Throughout the year our Nepco Lake produced very nearly 12 billion gallons of water, equivalent to pumping 38 to 40 million gallons of water every twenty-four hours and supplying the needs of our mills," Mr. Alexander explained. "The requirement of pure water from our Nepco Lake property has steadily been on the increase, due primarily to the development and further production of our better grades of paper, demanding higher quality and color.

"The Manufacturing department has done a magnificent job in the face of adverse conditions, not only during the past year but also on the careful planning of improvedments in equipment and expansion," Mr. Alexander stated. The first shut-down since the start of the war occurred early this year, and this was due to a shortage of salt cake and not mechanical failure. Slow deliveries of machinery and equipment have been a handicap in the improvement and construction program, and costs are still rising, but schedules have been met and definite progress is being made. The first stage of the new Nekoosa Bleachery was started early in June, increasing bleached kraft production from fifty to seventy tons per day, and equipment for the remainder of the plant is now on hand or being delivered so that the plant will be completed in the early fall. Various other important technical expansions and improvements have been incorporated into the operation.

Plans were announced to rebuild No. 4 paper machine at the Nekoosa mill this fall, and work is now being done weekends in replacing dryers, drives,

(Continued on page 22)

uses 4 logs instead of 5

another 20% log saving at Weyerhaeuser

NEW WEYERHAEUSER PLANT *at Longview, Wash., from which debarked logs go to both pulpmill and saw mill.*

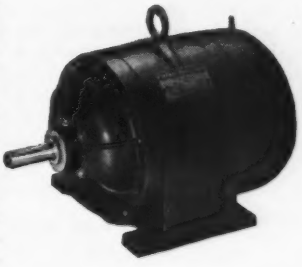
Five years ago, the Weyerhaeuser Timber Company installed a General Electric motor to drive a chipper in its first whole-log pulping plant. The shocks and stresses imposed by the powerful chipper were extraordinarily severe. Yet, year after year, the General Electric motor stood up under those strains. Today, it's still on the job, feeling just as young as ever.

In fact, so convincing was the performance of this motor that Weyerhaeuser management decided to "make it the same" when ordering electric drives for its second whole-log pulping plant. Only this time it was "G.E." all the way—a General Electric induction motor was selected to drive the barker pump, and a General Electric synchronous motor was specified for the chipper drive.

Today, the new pulp plant is turning out the *same amount of pulp from 4 logs where formerly 5 were required*, thanks to the high efficiency of the whole-log barking and chipping process. And Weyerhaeuser feels that a major part in maintaining this high level of efficiency is being played by the G-E motors and controls.

THE TOUGHEST PULP-MILL MOTOR YET!

In addition to big barker and chipper drives, General Electric also makes a complete line of conveyor and pump motors. Newest addition to its family of tough motors for mill service is the new Tri-Clad totally enclosed induction motor, available in ratings from 1 to 1000 hp. It is designed for use in adverse atmospheres—in dampness, out of doors, in corrosive atmospheres. It gives you these important construction features:



- A cast-iron, double-wall frame completely encloses and protects the windings and punchings.
- A nonshrinking compound on motor leads protects motor interior from dust and moisture.
- A rotating labyrinth seal further protects the motor interior from damage by foreign matter.

For complete information on this and any other electric drive you may require, get in touch with your local General Electric office. *Apparatus Department, General Electric Company, Schenectady 5, N. Y.*

GENERAL ELECTRIC

663-27

FINANCE

Scott Six-Month Net Up by Nearly Half

CHESTER, Pa. — After provision for preferred dividend, consolidated net earnings of the Scott Paper Company for the six months ended June 28, 1947, were $1,224,234, equivalent to $1.40 per common share based on the 871,847 shares outstanding. This compares with $859,724, for the corresponding period ended June 29, 1946, equivalent to $1.03 per common share based on 832,994 common shares.

President Thomas B. McCabe pointed out in his report that cost of products sold for the six months ended June 28, 1947, includes a charge of $947,000, accumulated since January 1, 1947, to equalize over the calendar year 1947 the known and estimated costs of wood pulp and other major supplies. He said that there was a great disparity between the abnormally high market price of wood pulp and the lower price of pulp produced for the company by its subsidiaries. Disproportion of materials used in different periods of the year, especially pulp, is one of the factors making this equalization of costs over the year necessary.

According to Mr. McCabe, "The company's pulp needs are adequately covered through 1947. Since the end of 1941 the company, as a result of its efficiencies in all phases of the business, has continued to absorb a very substantial portion of higher salaries and wages and increased costs of materials, having raised the average prices for its products only 26 percent during the last 5½ years.

"Due to the great demand for the company's products, an acute shortage continues," Mr. McCabe said, "in spite of the fact that its total current production, including its new products Cut-Rite and Scotties, is 63 percent greater in physical volume than in 1941." He paid tribute to the company's retail and wholesale distributors who have cooperated in the effective operation of the Company's allocation plan. The supply of household paper towels should be substantially improved in the late Autumn, he said.

Gypsum Profits Up Fifty Per Cent

BUFFALO, N. Y.—Net profit of the National Gypsum Company of Buffalo for the six months ended June 30 increased to $2,531,446, equal to $1.39 a common share, from $1,727,218, or 93 cents a share, in the same period last year, President Melvin H. Baker announced. Sales for the 1947 six-month period were $23,998,469, compared with $16,057,705 a year ago.

For the second quarter of 1947, the company's net profit was $1,216,829, compared with $1,053,528 in the second quarter in 1946. Second-quarter sales this year totaled $12,378,574, contrasted to $8,530,812 in the same quarter last year.

"The increase of 46 cents in earnings per share of common stock in the first six months of 1947 over the same period last year reflects the company's continued progress." Mr. Baker said in a semiannual report to stockholders.

Continental Can Net Up For Six Months

NEW YORK—Continental Can Company, Inc., and subsidiaries late last week reported consolidated net earnings of $9,240,040 for the twelve months ended June 30, 1947, after income taxes and other charges. Deducting from this amount dividends of $562,500 on the $3.75 cumulative preferred shares left $8,677,540 applicable to the common stock, equivalent to $2.75 per share on 3,157,431 common shares of $20 par value outstanding on June 30, 1947, according to Hans A. Eggerss, president.

These net earnings compared with net earnings applicable to the common stock for the corresponding twelve months' period ended June 30, 1946, of $3,014,263 equal to $1.05 per share on the 2,861,581 common shares then outstanding. They also compared with net earnings applicable to the common stock for the twelve months ended March 31, 1947, of $6,995,477 or $2.22 per share on 3,157,431 common shares outstanding on March 31, 1947.

Consolidated profits before depreciation, depletion and income taxes for the currently reported twelve months' period amounted to $20,180,861 compared with $9,642,511 earned before such charges in the twelve months ended June 30, 1946.

For the twelve months ended June 30, 1947, a total of $5,406,264 was deducted for depreciation and depletion, and $5,534,557 to cover the estimated amount required to be added to the reserve for income taxes.

The above earnings for the current period are based partly on estimates and are subject to current year-end adjustments.

FINANCIAL RECORD OF THE WEEK

New York Stock Exchange

High, Low and Last for Week Ending July 26, 1947

STOCKS

	High	Low	Last
A. P. W.	4½	4	4¼
Armstrong Cork Co.	48½	45½	48
Armstrong Cork Co., pf.	107	107	107
Celotex Corp.	28	26⅜	28
Celotex Corp., pf.	20⅞	20⅜	20⅜
Certain-Teed Products Corp.	17¼	15¾	17¾
Certain-Teed Products Corp., pf.	....	....	....
Champion Paper & Fibre Co.	25½	23½	25¼
Champion Paper & Fibre Co., pf.	106½	105½	106½
Congoleum Nairn Co.	30	27	29¾
Container Corp. of America	46	43¼	45
Crown Zellerbach Co.	31⅞	31⅜	31⅞
Crown Zellerbach Co., pf., 4.20	107½	106	106
Crown Zellerbach Co., 4 pf. A	120½	118¾	120
Dixie Cup Co.	36	33½	36
Dixie Cup Co., A	53¼	52½	52½
Flintkote Co.	33¾	31	33⅛
Flintkote Co., pf.	107	107	107
Robert Gair	9⅜	8	9
Robert Gair, pf.	....	....	....
International Paper Co.	50	47⅝	49⅞
International Paper Co., pf.	106¾	106¾	106¾
Johns-Manville Corp.	45¼	43	44¾
Johns-Manville Corp., pf.	122	120⅛	121¾
Kimberly-Clark Corp.	25⅞	25	25½
Kimberly-Clark Corp., pf.	110¾	109	109¾
Mac Andrews & Forbes	39	39	39
Mac Andrews & Forbes, pf.	....	....	....
Marathon Corp.	26	25½	25½
Mead Corp.	22½	20½	22¼
Mead Corp., pf., 4¼	99	99	99
Mead Corp., pf. 2	48	46¾	48
National Container Corp.	42⅜	39¾	41⅝
Paraffine Companies, Inc.	70	70	70
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	25½	23⅜	25½
Rayonier, Inc., pf.	37⅛	36	37
Ruberoid Co.	59¾	55	58½
St. Regis Paper Co.	11¾	11	11¼
St. Regis Paper Co., pf.	98½	98½	98½
Scott Paper Co.	47	45	46
Scott Paper Co., pf.	100⅜	99¾	100⅜
Sutherland Paper Co.	42½	42	42
Union Bag & Paper Corp.	34⅛	32	34¼
United Paperboard Co.	16⅜	15	16
U. S. Gypsum Co.	104⅜	102	103½
U. S. Gypsum Co., pf.	....	....	....
West Virginia Pulp & Paper Co.	42	41	42
West Virginia Pulp & Paper Co., pf.	111¾	111	111

BONDS

Abitibi Pulp & Paper Co., 5s, '53	....	....	....
Celotex Corp., 3½s, '60	....	....	....
Certain-Teed Products Corp., 5½s, '53	....	....	....
Champion Paper & Fibre Co., 3s, '65	103¾	103¾	103¾
Mead Corp., 3s, '66	....	....	....

New York Curb Exchange

High, Low and Last for Week Ending July 26, 1947

STOCKS

	High	Low	Last
Great Northern Paper Co.	46	44	46
Taggart Corp.	10	9⅜	10

BONDS

American Writing Paper Co., 6s, '61	....	....	....

For very *high coloring* power at very *low cost*... use

Du Pont SOLUBLE BLUE

PB-6-D

Here's a pigment with very high coloring power, which is very economical for coloring paper in the beater. It's Du Pont Soluble Blue PB-6-D—a form of Iron Blue—so processed as to give quick and complete dispersion in water.

Soluble Blue PB-6-D has excellent lightfastness. This shows to good advantage in blotting paper, twisting paper, lining stock . . . and any beater applications where a low-cost blue with good light resistance is required.

PB-6-D is standardized for color and strength in beater paper coloring. And you can count on it for uniformity.

A trial order will convince you. See your Du Pont salesman or write E. I. du Pont de Nemours & Co. (Inc.), Pigments Department, 1007 Market Street, Wilmington 98, Delaware.

Du Pont Pigments

DU PONT REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING ... THROUGH CHEMISTRY

Union Bag's Profits Reach Record High

NEW YORK—Net sales and profits of Union Bag & Paper Corporation for the June quarter and the six months ended June 30, 1947, were the largest for any quarterly and semi-annual periods in its history according to the corporation's report for the first half of the year issued this week.

Second quarter sales of $15,807,942 compare with $11,125,976 sales in the corresponding three months of last year and with sales of $14,289,575 in the first quarter of 1947. For the six months ended June 30, 1947, sales amounted to $30,097,517 compared with the $20,637,760 sales in the same period a year ago.

Net income for the three months ended June 30, 1947, was $3,071,601, equal to $2.42 per share, compared with $1,391,115, or $1.10 per share in the second quarter of last year, and $2,671,941 or $2.10 per share in the first quarter of 1947. For the six months ended June 30, 1947, net income was $5,743,542, equal to $4.52 per share, compared with $2,347,935, or $1.85 per share in the first six months of 1946.

Gottesman Expands Space At Firm's Present Address

NEW YORK—Having embarked on a large program of expansion and to care for the greatly increased personnel, Gottesman and Company, Inc., woodpulp importers, 22 East 40th Street, have entered into a long term lease effective September 1st, 1947, for five floors, 32nd to 36th floors inclusive, at 22 East 40th Street, New York, N. Y., where they have been for many years.

D. Samuel Gottesman, President of Gottesman & Company, Inc., announcing the lease for the additional space at their present address, stated that recent developments had confirmed the favorable prospects for the pulp and paper industry for the near term future and expressed the firm belief that the long term outlook continues exceedingly favorable. The restraints placed upon the growth of the industry during the war years and the many new uses developed during the war are the strong foundation on which the industry is now expanding and from which it should derive many advantages for the foreseeable future.

Ahdawagam Products Raises Sales Volume

WISCONSIN RAPIDS, Wis.—Ahdawagam Paper Products Company increased dollar volume of sales by 11 per cent over last year, but production tonnage was increased only 1½ per cent, Frank R. Walsh, manager, told stockholders August 23 at their annual meeting. George W. Mead, Walter L. Mead, Ralph R. Cole, Cloy K. Crouse and Walsh were reelected directors. George W. Mead, president; Walsh, vice president; Crouse, secretary, and Cole, treasurer, were reelected at the directors' meeting.

International Records Ordered Into Court

NEW YORK—In entering an order last week which confirmed a legal service of a summons to produce their papers for Federal Grand Jury investigation upon the Canadian International Paper Company and the International Paper Sales Company, Judge Henry W. Goddard went beyond the limits of his order with an opinion that the material requested appeared to be unreasonably voluminous. The proceedings were in the course of a Government plan to search through company records for acts which might be deemed detrimental to the newsprint market, and the court's action affirmed the legal rights of the United States Government to examine the papers, which the defendants argued were not subject to such action in United States courts.

Spokesmen for the Interantional interests this week withheld comment on the decision, stating simply that so far the entire matter is a question of legal procedure.

After a decision which dismissed the company's contention the court went on to declare that the records and documents called for under the Government subpoenas seem "so sweeping as to be unreasonable and oppressive and to call for modifications. "He suggested that attorneys for the Government and the companies agree on modifications, and offered to arbitrate disputed items.

Niagara Alkali Splits Stock Three for One

NIAGARA FALLS, N. Y.—A three-for-one split-up of Niagara Alkali Company stock was announced by President Clarke Cassidy. Under the plan approved at a meeting of stockholders, two new shares will be issued for each old share outstanding. The par value remains at $10 per share. After the split-up, Niagara Alkali's shares outstanding total 300,000.

Continental Can Votes Dividends

NEW YORK—Directors of Continental Can Company, Inc., last week declared a third quarter interim dividend of 25 cents a share on the common stock, payable September 15 to stockholders of record August 25. At the same time, the directors also declared a regular quarterly dividend on the $3.75 cumulative preferred stock of 93¾ cents a share, payable October 1 to stockholders of record September 15.

St. Lawrence Bids 115 For St. John Shares

MONTREAL — Directors of St. Lawrence Corporation are trimming off the loose ends of their pulp and paper group of companies. Most recent step in this direction was explained in a letter to Lake St. John shareholders last week. In it, St. Lawrence Paper Mills' president, John I. Rankin, stated that St. Lawrence was offering $115 a share for the minority stock outstanding. St. Lawrence Paper Mills owns all the preferred and approximately 88 percent of the common, of Lake St. John.

Shareholders have until August 15 to accept the offer, and may deposit shares with any branch of the Bank of Montreal, Royal Trust Co. in Canada, United States, United Kingdom, or Newfoundland, for delivery against purchase price, should the offer be accepted. Cost to St. Lawrence Paper in buying up the 12,000-odd shares will be around $1.4 millions. Purchase of these shares would give St. Lawrence complete control of Lake St. John.

As far as the St. Lawrence group is concerned, the chief effect of the offer, if accepted, will be to throw the entire earning power of Lake St. John into St. Lawrence Paper Mills. If Lake St. John continues its quarterly dividend of $1.50 a share, purchase of the minority stock will mean a theoretical $70,000 additional to St. Lawrence Paper, on a yearly basis. Such an increase in earnings will still be effectively dammed back from St. Lawrence Corp. shareholders, since preference shares of St. Lawrence Paper are in arrears $66.25 a share.

Recent market activity of St. Lawrence Corp. common, which has moved the common up to a fraction below the year's high of $15, has started investors speculating whether a plan of reorganization is ready to be announced. Spokesmen for the company indicate that no plan has yet been decided on. It is understood that a large part of the recent buying in St. Lawrence Corp. common has been originating in New York, with buying orders issued through a local brokerage firm.

As pointed out previously, any reorganization plan for St. Lawrence Corporation must provide for the dividend arrears on St. Lawrence Paper Mills preferred and the Corp. "A" preferred. As of July 15, 1947, arrears on the paper mills will amount to $8,273,000; and on the "A" preferred, $5,541,000.

Peck Joins Controllers Institute

KALAMAZOO, Mich. — Thomas W. Peck, secretary and assistant treasurer of Kalamazoo Vegetable Parchment Company, has been elected to membership in the Controllers Institute of America. The Institute is a technical and professional organization of controllers devoted to the improvement of controllership procedure.

REFRESHER COURSE ON ORR-CHEM FELTS

Some months ago we "broke" the ORR-CHEM felt story—explained that by subjecting standard felts to a special chemical treatment on specially designed equipment such felts became better performers in service than untreated felts. Felts so treated have worked wonders in the field.

- *They set to the machines quicker and better.*
- *They drain well and show far less tendency to mat.*
- *There is less than normal shrinkage or stretch. No blowing.*
- *Orr-Chems require little or no washing up.*
- *They are in almost every instance, and on practically all grades, materially reducing felt costs per ton through longer wear.*

Already a hundred favorable comments have been received from the mills and all are available. Also available are Orr-Chems for trial.

ORR-CHEM

THE ORR FELT & BLANKET CO., PIQUA, OHIO

Predicts $20 Million In B. C. Expansions

VANCOUVER, B. C.—Within the next four years the pulp and paper industry will spend about $20 million in British Columbia, according to H. M. Lewis, chairman of the Canadian Pulp and Paper Association, Western Branch.

Mr. Lewis said the industry's total investment in five years has increased from $70 million to $96 million in plant equipment, personnel housing and forest lands, in British Columbia.

"Each of the eight mills is planning and undertaking extensive plant improvements calling for heavy expenditures of capital," he said.

The pulp and paper industry, which has long been a major factor in the economy of this province, had a record production of $47 million last year. This is nearly one-third of the total of the lumber industry, which in 1946 produced $150 million in its products.

Actually the production in this industry will probably be higher during coming years as figures represent only the eight established mills, and do not take into account the new Celanese Corporation of America's mills which will be built soon near Prince Rupert at a cost of more than $15 millions.

In British Columbia the payroll of the industry has risen from $9 million in 1942 to more than $14 million last year. In the same period the number of employees has increased from 4,025 to 6,553.

Each of the eight mills is planning extensive expansion and improvement calling for heavy expenditures during the next few years, and will require many more employees.

Mills in British Columbia are: Powell River, Pacific Mills, British Columbia Pulp and Paper (with a plant at Woodfibre and Port Alice), Sorg, Sydney Roofing and Paper, Westminster Paper, and Bloedel, Stewart & Welch.

Western SAPeyes Hear Shennon On England

CHICAGO—A. D. Shennon, vice-president and general manager of the International Tag & Sales Book Company and a past president of Rotary International, was the speaker at Monday's meeting of the Western Division of the Salesmens Association of the Paper Industry held at the Hotel Sherman. Shennon recently returned from a six weeks trip through England and related some interesting and valuable first hand opinions on economics and political conditions in that country.

Members were reported to have greatly enjoyed the appearance of Roy D. Welch, district sales manager of Marathon Corporation, who spoke at the July 21 meeting and reviewed not only the history of the Corporation but likewise gave some most interesting accounts of the packaging program developed by Marathon. The week previous, on July 14, W. H. Fetridge, Popular Mechanics Magazine, reviewed the founding of the magazine and also stressed the difficulty his organization was having in securing enough paper for printing purposes.

Meanwhile, the attendance at the golf outings picked up materially on July 18 at the Briergate Country Club when ten foresomes enjoyed golf and about an equal number attended the informal dinner in the evening. Lennox Ransom, golf chairman, reports that the next outing will be at Medinah Country Club on August 8 with the closing affair, always a gala proceeding, set for Olympia Fields Country Club on September 16.

New Upson Dryers to Conserve Waste Heat

LOCKPORT, N. Y.—Working conditions in the plant of the Upson company here will be improved and heat, now wasted, will be conserved for manufacturing purposes, when the installation of a new drying system, now under way, is completed, according to R. J. Farley, vice president in charge of manufacturing.

When six large fans, now being installed in a newly-completed building adjacent to the board mill, are in operation, they will deliver approximately 300,000 cubic feet of fresh outside air per minute to ventilate the plant in warm weather. In winter, this air will pass through heat exchangers and will help to heat the mill.

Heat rising from the dozens of huge cylindrical dryers in the board mill will be collected by a new hood, or canopy, now being erected over the dryers, and will be exhausted by the fans to heat water for processing purposes, Mr. Farley said.

"It would be possible to drive a jeep through the main air ducts which will lead in from the roof," Mr. Farley remarked. The dryer hood is about 150 feet long, 14 feet wide and weighs 40 tons.

"Better control of drying will help to improve the quality of our products," Mr. Farley said. It is expected that the project will be completed by September 1.

Arabol Takes Over St. Louis Plant

NEW YORK CITY—The Arabol Manufacturing Company, pioneer adhesives manufacturer, has acquired the St. Louis Chemical & Manufacturing Company, St. Louis. This will be operated as an adhesives manufacturing plant. The addition of this plant to the company's long-established branch offices and manufacturing plants in Chicago, San Francisco and Brooklyn will expedite both manufacturing and deliveries—to all national customers as well as to the customers in the St. Louis and adjacent areas.

Waste Paper Trade Analyzes Prospects

ST. LOUIS, MO.—A Public Relations program designed to assist waste paper dealers in 282 cities in eight midwest states has been found surprisingly helpful to communities in which the program is currently in operation. This information was made available by the Midwest Consumers of Waste Paper in conjunction with the release of a brochure, "The Waste Paper Industry, Its Problems and Prospects for the Future."

This program, directed toward bringing about complete understanding between the consuming mills and the waste paper dealers is the first of its kind.

The brochure, as reported by William H. Beckwith, vice-president of the Morris Paper Mills, Morris, Ill., and chairman of the industry's Public Relations committee, charts a steady increase in paper consumption and the increasing need for waste paper as a supplement to scarcer pulp. It shows how the small dealer's profits may be materially increased by following the simple practices of sorting, grading, baling and properly shipping waste paper in its most usable form to the consuming mills.

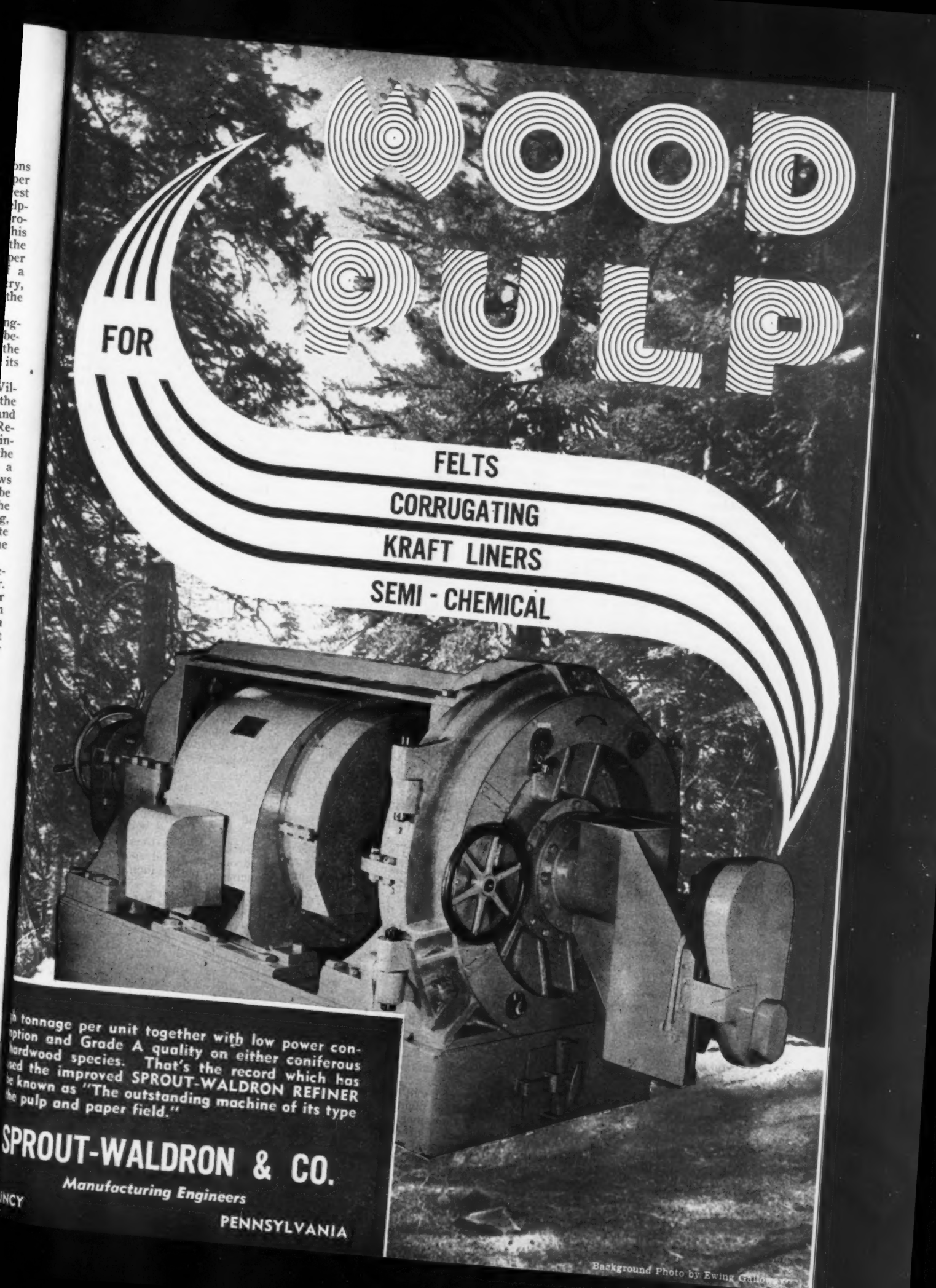
Referring to the many civic achievements attributed to the program, Mr. Beckwith explained that waste paper collections were being sponsored in most of the midwestern cities in which the campaign operates, for the benefit of service clubs, churches, schools, Boy Scouts and similar groups.

Communities have benefited from new playgrounds, summer camps, and effective civic betterment programs. Boy Scouts financed trips to the Jamboree in Paris, France, and, in one case, a disabled war veteran was given a new $14,000 home.

The 18-months' old program is being operated by Frank Block and Associates, counsel to the industry. FBA Community relations staff men call on each of over 450 waste paper dealers in the Midwest at least once every six weeks. During these visits the dealers' plants and waste paper handling methods are discussed and means suggested for increasing the efficiency of dealer operations through the introduction of modern paper handling methods. A personalized copy of the brochure is being presented to each midwestern waste paper dealer.

Unusual newspaper cooperation in keeping the campaigns alive is reported by the public relations counsel, including front page stories, spot pictures, and a press generally alerted to news values inherent in the campaign.

Summing up, Mr. Beckwith said: "With shortages in newsprint and other forms of paper expected to continue for some time to come, this campaign is proving of immense aid in making available for re-usage vast quantities of waste paper that otherwise would never be reclaimed."


WOOD PULP
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h tonnage per unit together with low power con-
ption and Grade A quality on either coniferous
hardwood species. That's the record which has
ed the improved SPROUT-WALDRON REFINER
e known as "The outstanding machine of its type
he pulp and paper field."
SPROUT-WALDRON & CO.
Manufacturing Engineers
PENNSYLVANIA
Background Photo by Ewing Galloway

Woodlands Section Hears Obligations

PETAWAWA, Ont. — Unless problems of better forest management are solved, the pulp and paper industry of Canada may be accused of not using its best efforts to discharge the responsibility which it has in regard to economic utilization and conservation of the country's forest, F. L. Mitchell, general manager of the Canadian Pulp and Paper Association, said here last week.

Mr. Mitchell spoke at the first gathering of a three-day summer meeting of the Woodlands Section of the Pulp and Paper Association of Canada which drew more than 400 forestry men from coast to coast.

Maj.-Gen. Howard Kennedy, chairman of the Ontario Royal Commission on Forestry, told of the methods of inquiry by his commission, and said that his report would focus attention on the problem of bringing back waste farm lands to forest production in Ontario.

He said that his recommendations, if implemented, would in the next 20 years make farmers want to stay on the farms because farmland would become more profitable and attractive as a result of the wood crops and improvement of land.

Maj.-Gen. Kennedy said that it was "heartening" to see what can be done with abandoned land. Today, while about 12,000,000 seedlings were being artifically planted yearly in Ontario 10 times that quantity would be needed to make a dent in the task of returning Ontario lands to full forest growth.

R. M. Fowler, president of the Canadian Pulp and Paper Association, in a prepared message pointed out the importance to the industry of the Woodlands Section, and hoped the section would press forward with the whole job of implementing the forest policy.

"This is a subject of great interest to Canadian governments and the Canadian people, and the pulp and paper industry should be at the forefront at the study of forest conservation for economic use," he said.

Julian H. Merrill, of Nipigon, Ontario, was named chairman of the committee on Forest Fire Prevention, replacing E. E. Shaw, Montreal.

Norton J. Anderson, general manager of the Canadian Forestry Association, Montreal, told of some of the current activities of his organization and urged greater cooperation among all forestry groups.

H. E. Brinckerhoff, executive secretary of the American Pulpwood Association, said the Canadian Woodlands Section was ahead of the American group on woods labor training and on logging mechanization.

Douglas Jones, secretary-engineer of the Technical Section of the Canadian Pulp and Paper Association, urged greater coordination between sections, and T. H. Robinson, chairman of the Industrial Relations Section, said that the rise of unions and growing scarcity of labor, together with labor legislation affecting the industry, called for the appointment of specialists in industrial relations.

Pacific Mills Promotes Personnel Officers

OCEAN FALLS, B. C.—Cyril J. Hague, personnel manager, Pacific Mills Limited, since 1942 has been transferred to Vancouver as assistant to E. W. Campbell, personnel director of the firm. Mr. Hague's former position at Ocean Falls is being filled by Thomas E. Berto, who has been with the personnel department of the company since his discharge from the R.C.A.F. in June last year.

Mr. Hague has had 20 years' service with Pacific Mills. He has held various positions in the townsite, in the hotel office, in the mill and in the time and pay offices, and served for the past six years as secretary-treasurer of the school district, which not only comprises the pulp and paper town of Ocean Falls, but the other coastal communities of Bella Coola, Namu, Firvale and Bella Bella. Mr. Hague is an enthusiastic yachtsman and has his own 34-foot cabin cruiser.

Thomas Berto, who succeeds Mr. Hague, was graduated with a B.A. from the University of British Columbia and joined the provincial government Department of Labour, Apprenticeship Branch, in 1935. He enlisted in the R.C.A.F. in 1942 and served overseas. He joined the personnel department of Pacific Mills in 1946 on receiving his discharge.

L. S. McGill, another R.C.A.F. veteran, with a fine record as pilot and instructor, has also joined the staff of the personnel department of Pacific Mills at Ocean Falls, having been transferred to this division from the technical control staff of the company.

Bedford Plant Assumes National Container Name

LYNCHBURG, Va.—According to announcement by E. Stuart Camden, resident agent, Bedford Pulp & Paper Company, Inc., at Big Island, has changed its name to National Container Corporation of Virginia. "The Big Island plant has been undergoing extensive improvements since it was acquired by National Container Corporation, and further enlargements are planned," Mr. Camden said.

National Container Buys Moore Boxes, Inc.

CHICAGO—The National Container Corporation has recently purchased the plant and equipment of Moore Boxes, Inc., a fast growing organization which will add materially to the converting plant production of National Container. L. T. Moore, one of the owners of Moore Box, will stay on as general manager of the newly owned National Container acquisition.

Knowlton Pay Scale Goes to $1 Base

WATERTOWN, N. Y.—A general increase of 16 cents per hour has been granted to 175 employes of the Knowlton Brothers, Inc., raising the basic wage scale from 84 cents to $1 a hour, effective Aug. 1.

Negotiations for the new contract, to run through July 31, 1948, were completed between the Knowlton Brothers and the Circle Kay Local No. 463, International Brotherhood of Paper Makers.

Workers at the plant had been on a 48-hour work week with time and one-half paid for eight hours. Time and one-half will be continued to be paid for hours after the 40-hour week at the basic $1 an hour rate.

David C. Knowlton, company official, said that the union contract also provides holiday pay for five of the six recognized holidays — New Year's, Christmas, Fourth of July, Labor Day and Thanksgiving Day.

The negotiations were attended by the local union committee comprising Thomas J. Hutteman, president; Mrs. Fennie Huffman, Charles Willard, John Hutteman, Samuel Remington and Merrill Milligan. E. B. Lambton, International Brotherhood of Paper Makers regional director of New York State, and James Call, general representative, were also present. The Knowlton Brothers company was represented by T. E. Knowlton, president; D. C. Knowlton, R. W. McCormick, J. C. McCormick, E. W. Clarke and M. T. Newcomb.

Knowlton Brothers mill was closed all day July 21 for the annual outing of the employes and their families at the Cedar Point state park on the St. Lawrence river.

It was the first outing that this organization has held in the past three or four years and an attendance of about 250 was recorded. For these employes it was a holiday with pay.

During the day there were various outdoor games and sports as well as dancing in the pavilion.

Thilmany Raises Wage Scale

KAUKAUNA, Wis.—Thilmany Pulp and Paper Company has granted a six-cent hourly wage increase to all hourly paid employes, as the result of an agreement between the company and the Interantional Brotherhood of Paper Makers, Local 20, and the International Brotherhood of Pulp, Sulphite and Paper Mill Workers, Local 147, after negotiations concluded July 24. The new base rate is $1.06 per hour for male employes, and 95 cents an hour for female employes. The contract with the union was continued without change for another year, expiring July 31, 1948.

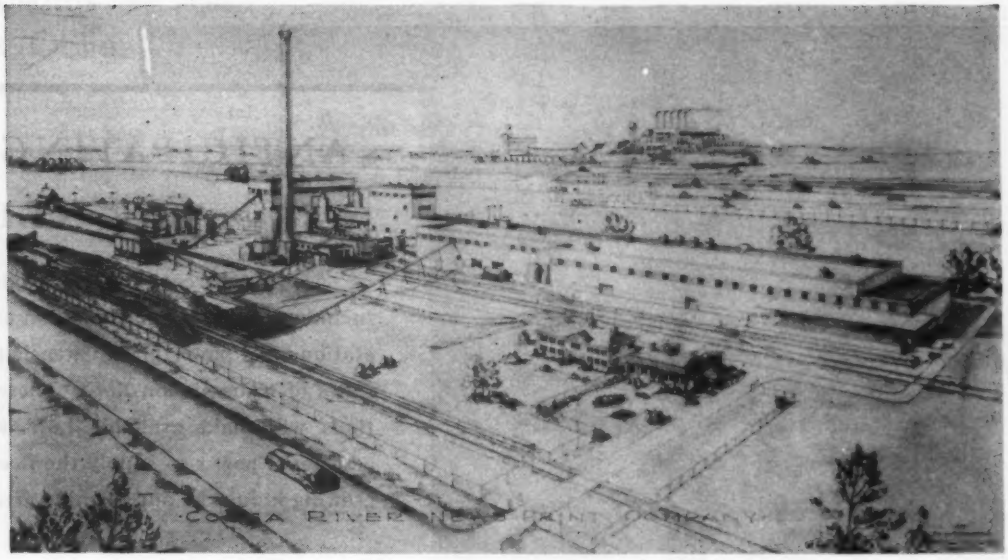
ANTICIPATING THE NEED...

Our current work for Public Utilities includes design and construction of 23 power stations and power plant extensions and 220 miles of transmission lines. These installations will make available 1,673,000 KW of additional power to supply the needs of fast growing industrial and farming areas.

Mississippi River Crossing Tower and Louisiana Power Station of the Gulf States Utilities Company in Baton Rouge.

STONE & WEBSTER ENGINEERING CORPORATION

A SUBSIDIARY OF STONE & WEBSTER, INC.



Preliminary architect's sketch of $30,000,000 Coosa River Newsprint Company plant at Childersburg, Alabama, on which Kimberly-Clark Corporation is expected to begin work on building design immediately.

Hercules PMC Adds Five for Research

WILMINGTON, Del. — By an expansion in its activities the Development Division of Hercules Powder Company's Paper Makers Chemical Department under the direction of Dr. William P. Campbell has been increased by an additional five men. The increased personnel will make possible a more effective research program on chemicals for the paper and other industries. The program includes finding new uses for, and improving, established products; developing new products, and conducting field tests for their evaluation.

Harris O. Ware, who for the past ten years has been engaged in technical service and research work relating to casein and other derivatives of raw milk, will direct the development activities of the Dairy Products division. Mr. Ware is particularly well known for his activities in the paper coating field. He will be assisted by Richard T. Trelfa and Ted C. Foin. Headquarters for this group will be in Kalamazoo, Michigan, where Hercules has a paper chemicals plant and laboratory.

Assignments related to the Paper Chemicals division will be handled by Henry F. Heller and Robert T. Mashburn. Mr. Mashburn will be located in Kalamazoo and continue to direct the experimental work in the laboratory there. Mr. Heller will remain in Wilmington.

George B. Field and Don Martin will handle assignments related to resin emulsions, metallic resinates and other products of the department's Industrial Chemical division and will remain in Wilmington.

Alexander Outlines NEPCO's Problems

(Continued from page 10)

and in making major additions. At Port Edwards a new roof is being constructed over Nos. 5 and 6 Machine Rooms, and is unusual in that the project is being accomplished without shutting down the machines. When completed it will include the latest features in ventilating and heating. In addition, throughout departments in both mills continued improvement has been made in the mechanical handling of materials and products.

The Sales department report showed that total paper shipments during the past year were the highest in Company history, with the exception of 1941, and preliminary statistics for 1947 indicate that the peak will be approached or passed. Tonnage figures show a continued shift from wrapping to fine papers, and the growth of the watermarked Nekoosa Bond lines continues to be the outstanding merchandising feature of the wholesales program. Estimates indicate an increase this year of more than 6,000 tons, bringing the watermarked mill lines to approximately 44% of the total tonnage for the year 1947. "The increase in volume of fine papers is in line with our program over the last ten years," Mr. Alexander pointed out. "In 1935 10% of our sales were on fine and 90% on wrapping grades. For the year ending 1947 it is estimated that approximately 50% of our shipments will be on fine papers."

The coordinated advertising program plays an important part in building up the national consumer acceptance for these grades, and the substantial increases set up for advertising expenditures each year play an important part in the over-all merchandising program.

Mathieson Insurance Covers Whole Staff

NIAGARA FALLS, N. Y.—The Mathieson Alkali Works has adopted a comprehensive employe insurance and benefit plan to cover all regular employes with more than three months of service. Benefits will include life insurance, nonoccupational accident and sickness benefits, hospitalization, special hospital services and surgical benefits.

This action of the board of directors was recently announced by the management to employes and union representatives at a special meeting held at the company plant here.

Life insurance coverage of $500 will be provided for employes with three months to one year of service and $1,000 for those with more than a year's service. This will be continued for employes past 65 years of age whether on active or inactive service.

Benefits for any one nonoccupational accident or illness will be paid for a maximum of thirteen weeks and on the basis of the employe's earnings, with weekly benefits ranging.

The plan also provides for hospitalization of $5 a day for a maximum of 31 days for each hospitalization, special hospital services up to a maximum of $25, and surgical benefits in accordance with a medical operation scheduled up to a maximum of $75.

Bosch Joins Van Reekum

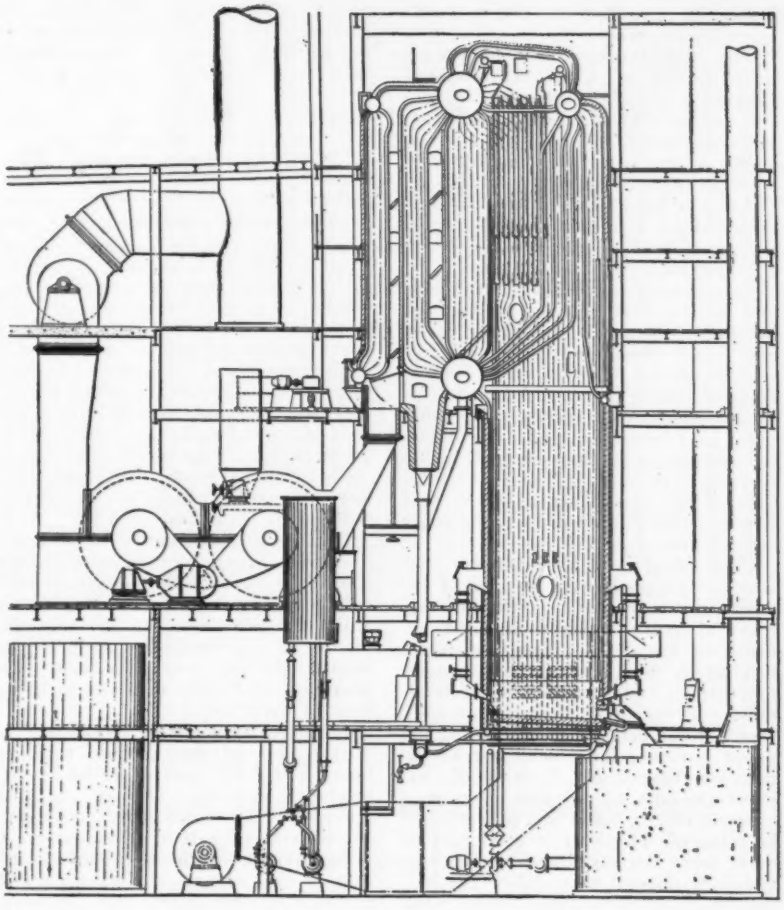
NEW YORK—Juan P. Bosch, formerly sales manager of the Latin American division, Bulkley, Dunton Paper Company, S. A., has joined the Van Reekum Paper organization as manager of the Buenos Aires establishment.

BRUNSWICK
PULP & PAPER CO. *selects the*
C-E Recovery Unit

A C-E Recovery Unit, cross-sectional elevation of which is shown at the right, was recently purchased by the Brunswick Pulp & Paper Company, Brunswick, Georgia.

This unit is designed to burn 660,000 pounds of black liquor solids per 24 hours and will produce steam at 450 psi and 725 F.

The Brunswick Unit will incorporate the many service-proved C-E design features that have brought new standards of reliability, efficiency and operating economy to users of recovery equipment. B-156



C-E

COMBUSTION ENGINEERING

200 Madison Avenue, New York 16, N. Y.

C-E PRODUCTS FOR THE PAPER INDUSTRY INCLUDE STEAM GENERATING, FUEL BURNING AND RELATED EQUIPMENT; ALSO MANY TYPES OF PRESSURE VESSELS.

Report from Germany

By Otto Goy, Editor, Wochenblatt für Papierfabrikation

Paper is a scarce article in Germany. The Central Control Panel allows Germany 26 kg. (57.2 lb.) of paper per person per year. This means about 1.73 million tons of paper per year, plus about 400,000 tons for export. At present not even one-third of this tonnage is being manufactured.

In the last years before the war, 2.2 million tons of paper and 680,000 tons of cardboard were produced in Germany yearly. In the record years of 1937 and 1938, 2.6 to 2.7 million tons of paper and 900,000 tons of board, valued at more than one billion Reichmarks, were produced.

The largest exports of paper were made in 1929 when 400,000 tons were shipped. Exports then dropped to 150,000 tons in 1934 and were 224,000 tons of paper and 57,000 tons of board in 1938. At this time the domestic consumption figured approximately 35 kg. (77 lb.) of paper and 12 kg. (26.4 lb.) of board per head per year. This was less than half of the United States consumption.

Production cannot meet requirements and there is a definite paper shortage, because of the shortages of coal, wood, and other manufacturing materials. German forest reserves were heavily depleted during the war. Added to this is the widespread necessity of using wood as a heating material for industry and homes in place of coal, which is at present not available. A small part of the wood burned in the past winter would suffice to supply the paper industry for a year.

Used paper was an important raw material especially for the board industry in peacetime. Stocks of this material are practically depleted because of the small amount of paper production and because old paper, newspapers and wrapping paper is almost entirely used up in the homes. Many stores demand the return of old paper before selling new wares. To increase these stocks, it is hoped that more amounts of old files from government offices, banks and bureaus will be released. However, a good part of these were destroyed during the war and it is difficult to mobilize the balance because the various offices wish to keep all of their records.

In prewar days, since domestic forests could not cover all of the needs, Germany imported a considerable amount of pulpwood from Finland, the Baltic States, Poland, Czechoslovakia and even Canada. Imports ran to a value of about fifty million Reichmarks. Besides that, cellulose—chiefly sulfate cellulose—was purchased from Finland, Sweden and Norway for production of spun and bag paper and artificial silk cellulose. At the present time there is no money credit for the importation of cellulose since all credits established through exports must be used to pay for much needed foodstuff imports. The loss of these imports has greatly increased the lack of raw materials for the paper industry. In the French zone, lumber has even been exported to Switzerland to pay for food imports.

As a result of the insufficient paper production, there has been a shifting of the supply to consumers. The first allotments which must be met are the requirements of the Military Governments and German authorities for printed articles and writing. Next packing paper for foods, medicines, chemicals, soaps, etcetera is urgently needed. Practically all the balance of the paper is taken by the newspapers, leaving little if any for other uses such as writing and good printing paper. During the severe winter, even the newspapers—which mostly only appear once or twice a week—were further cut, and in some instances could not be printed at all for the lack of paper.

Under these circumstances, it is impossible to predict when paper production will reach the allowed volume. In any event, paper will be scarce for a good many years. Even when the factories will be able to get sufficient coal they will continue to lack raw materials because wood is becoming a scarce article in the entire world, especially for the next few years, and Germany will certainly not be in any position to import.

Because of the division of Germany into four zones, of the close border control between the zones and of difficult traveling conditions, it is today still very difficult to get any accurate picture of the condition of the paper industry in each zone. As well as is possible to tell, how does the industry look in each zone?

In the American zone, approximately 16,000 tons of paper, 2500 tons of board and 5,000 tons of cellulose are produced monthly. This is a yearly quota of 9 kg. (19.8 lb.) per person. More than one-half of this production is in Bavaria. With the proper allocation of coal and wood, Bavaria could produce monthly 20,000 tons of paper, 4000 tons of board, and 13,500 tons of cellulose. For this production, they would need 1.5 million cubicmeter (c.b.m.) = (1.965 x 10^6 cu. yds.) of wood. They receive 400,000 c.b.m. (524,000 cu. yds.) while for heating purposes 9.5 million c.b.m. (12.445 x 10^6 cu. yds.) were allocated.

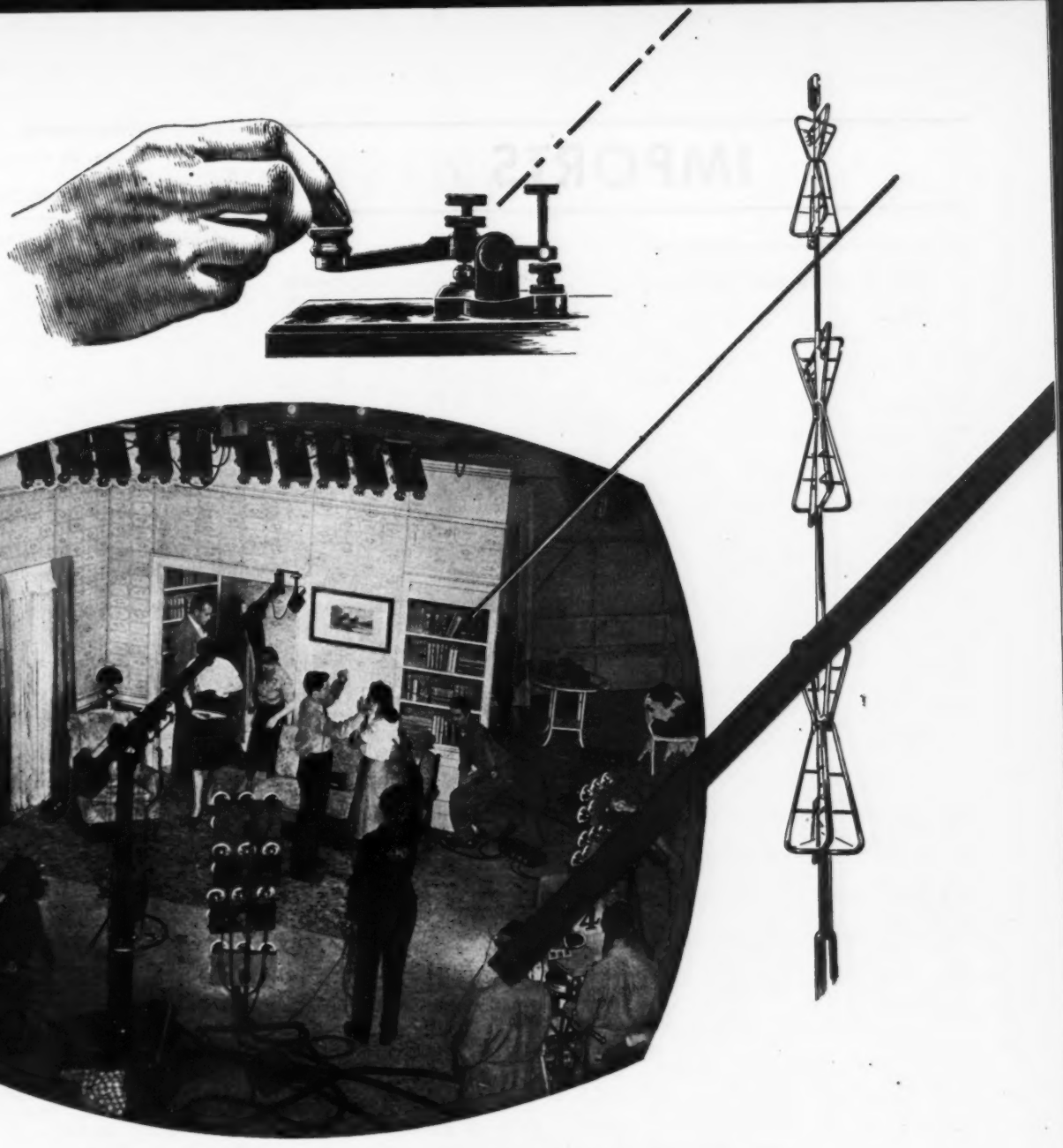
Chief product of the Bavarian district is newspaper, and it must supply the entire U.S. zone plus the U.S. district of Berlin. Next of importance is wrapping paper for food stuffs. For the production of spun and bag paper for the shipment in bags of salt, flour, cement, fertilizer, etc., Sweden was supposed to deliver 39,000 tons of sulfate cellulose in 1946, but only delivered 15,000 tons. For 1947, 36,000 tons of imported sulfate cellulose has been contracted for on a goods exchange basis. The problem of used paper with the present low production is a difficult one. Whether the authorities and banks can give up more of their files after losing a large part during the war is a question.

In the British zone, about 80 plants are working. The production of paper, board, cellulose and woodpulp is about 15,000 tons per month, compared to 65,000 tons in peacetime. There are no large forest preserves in the British zone and the raw material question is made more difficult by the necessity of importing wood from the other zones. Thus during the past year 1500 tons of paper wood was to have been delivered from the Russian zone. For the production of spun and bag paper 16,000 tons of sulfate cellulose were imported in the summer of 1946. Without the importation of raw materials from other zones or countries, the paper industry in this zone is in a very poor position. Because it is a big question whether the old paper stocks can be increased by the sorting out of old files from the authorities and the collection of old books and magazines. The production in this zone is mainly wrapping paper and board and spun and bag paper for the production of paper sacks. Employment in this district is said to be 4000, the largest single unit being the Hanover Paperfactory, Inc., with 700 employees. This mill also makes the food rationing cards for this zone. Other plants operating in this zone are Felix Schoeller, Jr., near Osnabrueck, Peter Temming Inc. in Glueckstadt, Holstein, the Reisholz Works of the Feldmuehle Paper and Celluloseworks, Inc., near Duesseldorf who produce the newspaper for the British zone. The paper factory, Zerkall Renker & Sons is again producing their very fine writing paper which was also well known in other countries. Other fine paper works in the Duerener district suffered heavy damage in the fighting.

In the French zone, the mills are for the most part not damaged. But the lack of coal, paperwood and cellulose as in other zones makes their economic operation nearly impossible. Consequently there is a terrific paper shortage.

The Russian zone in which a major proportion of the industry was located shows an entirely different picture. The largest and most important works, in so far as they were not destroyed in the fighting, have been dismantled. Thus the large paper machines of the Feldmuehle Paper and Cellulose Works, Inc., in Odermuende were taken out and they are supposed to be set up at the Black Sea. Other mills reported to be dismantled are: the Ammendorfer Paperfactory, Wiede &

(Continued on page 32)



look what happened to "sparks"

Glance behind the miracle of wireless images flashed through space and you will see the hand of the pioneer in telegraphy. For video is an extension of the basic principles by which sound was first transmitted electrically. This expansion of pioneer conceptions into vast projects has created many modern industries. As a pioneer producer of electro-chemical products in America, Niagara has improved the quality of these materials and expanded the scope of their utility until they are now...
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IMPORTS

NEW YORK IMPORTS

WEEK ENDING JULY 26, 1947

SUMMARY

Newsprint	20342 rolls
Coated Paper	32 cs.
Gummed Paper	89 cs.
Carbon Paper	1 crt.
Tissue Paper	4 cs.
Decalcomanias	1 cs.
Drawing Paper	35 cs.
Printing Paper	26 cs.
Wallboard	1 cs.
Parchment Paper	1 cs.
Filter Paper	30 cs.
Kraft Paper	267 rolls
Developing Paper	1 cs.
Wrapping Paper	887 rolls
Wallpaper	20 cs.
Misc. Paper	627 rolls, 367 cs.

NEWSPRINT

News Syndicate Co., Brian, Thorold, 1292 rolls.

H. G. Craig Co., G.D.D., Donnacona, 374 rolls.

News Syndicate Co., Kay, Thorold, 1378 rolls.

R. A. Olsen, Inc., Kermic, Donnacona, 379 rolls.

News Syndicate Co., Colabee, Baie Comeau, 7678 rolls.

R. A. Olsen, Inc., A.C.D., Donnacona, 387 rolls.

N. Y. Journal American, Markland, Liverpool, N. S., 1126 rolls.

N. Y. Tribune, Inc., Markland, Liverpool, N. S., 1684 rolls.

N. Y. World Telegram, Markland, Liverpool, N. S., 725 rolls.

Brooklyn Eagle, Inc., Markland, Liverpool, N. S., 735 rolls.

Herald Statesman, Inc., Markland, Liverpool, N. S., 41 rolls.

Richmond Newspapers, Inc., Markland, Liverpool, N. S., 1708 rolls.

Sentinel-Star, Markland, Liverpool, N. S., 311 rolls.

Nyos Foreign Freight Forwarders, Veendam, Rotterdam, 156 rolls.

H. G. Craig Co., Donpaco, Donnacona, 367 rolls.

N. Y. Times, Mormacreed, Helsingfors, 1155 rolls.

Herald Tribune, Inc., Mormacreed, Helsingfors, 159 rolls.

Madden, Reeve, Angel & Co., Mormacreed, Helsingfors, 640 rolls.

Elof Hansson, Inc., Drottningholm, Gothenburg, 47 rolls.

COATED PAPER

F. P. Gaskell Co., Inc., Petersburg Victory, Glasgow, 32 cs. (for cigarette tipping).

GUMMED PAPER

B. F. Drakenfeld & Co., Inc., Petersburg Victory, Liverpool, 30 cs. (not printed).

B. F. Drakenfeld & Co., Inc., Valacia, Liverpool, 59 cs. (not printed).

CARBON PAPER

Mynol Chemical Co., Petersburg Victory, Liverpool, 1 crate.

TISSUE PAPER

B. F. Drakenfeld & Co., Inc., Valacia, Liverpool, 4 cs. (pottery).

DECALCOMANIAS

Sellers Transportation Co., Valacia, Liverpool, 1 cs. (ceramic transfers).

DRAWING PAPER

H. Reeve Angel & Co., Inc., Fort Musquarro, London, 2 cs.

Olympic Shipping Co., American Veteran, Havre, 31 cs.

International Expediters, Port Wyndham, London, 2 cs.

PRINTING PAPER

Stevens Nelson Paper Corp., American Veteran, Havre, 25 cs.

A. W. Fenton Co., Fort Musquarro, London, 1 cs.

WALLBOARD

Treetex Corp., Drottningholm, Gothenburg, 1 cs.

PARCHMENT PAPER

Karr Ellis Co., Fort Musquarro, London, 1 cs.

FILTER PAPER

H. Reeve Angel & Co., Inc., Fort Musquarro, London, 11 cs.

Karr Ellis Co., Fort Musquarro, London, 1 cs.

E. H. Sargent Co., Drottningholm, Gothenburg, 5 cs.

H. Reeve Angel & Co., Inc., Port Wyndham, London, 13 cs.

KRAFT PAPER

Richard Bauer, Drottningholm, Gothenburg, 267 rolls.

DEVELOPING PAPER

J. E. Bernard & Co., Veendam, Rotterdam, 1 cs.

WRAPPING PAPER

The Borregaard Co., Inc., Drottningholm, Gothenburg, 178 rolls.

E. W. Twitchell, Inc., Mormacreed, Helsingfors, 477 rolls.

Jay Madden Corp., Mormacreed, Helsingfors, 232 rolls.

WALLPAPER

All Transport, Inc., De Grasse, Havre, 8 cs.

R. F. Downing & Co., Inc., De Grasse, Havre, 12 cs.

MISCELLANEOUS PAPER

Novasel Paper Corp., Gainesville Victory, Antwerp, 1 cs.

New York Trust Co., De Grasse, Havre, 627 rolls.

U. S. Commercial Co., Flying Arrow, Kobe, 360 cs.

Stevens Nelson Paper Corp., America, Southampton, 6 cs.

RAGS, BAGGINGS, ETC.

E. J. Keller Co., Inc., Courser, Shanghai, 150 bls. waste bagging.

Tradesmans National Bank Trust Co., Petersburg Victory, Glasgow, 244 bls. old webbing.

American Cotton Products Co., Trein Maersk, Shanghai, 100 bls. cotton waste.

Darmstadt Scott & Courtney, Gainesville Victory, Antwerp, 57 bls. old waste bagging.

E. J. Keller Co., Inc., Gainesville Victory, Antwerp, 49 bls. old jute bagging.

OLD ROPE

International Purchasing Co., Paraguay, Copenhagen, 111 bls.

HIDECUTTINGS

John Gorvers, Cape Isabel, Barranquilla, 776 rolls.

(———), Cape Isabel, Barranquilla, 35 bdls., 132 rolls.

WOODPULP

Pagel Horton & Co., Inc., Notre Dame Victory, Husum, 1830 bls. dry bleached sulphate pulp; 2048 bls. dry sulphate pulp.

Pulp & Paper Trading Co., Notre Dame Victory, Hernosand, 1218 bls. 2nd quality strong sulphite pulp.

Perkins Goodwin & Co., Notre Dame Victory, Hernosand, 1520 bls. 2nd quality strong sulphite pulp.

Bulkley Dunton Pulp Co., Notre Dame Victory, Hernosand, 732 bls. 1st quality kraft pulp.

Cellulose Sales Co., Notre Dame Victory, Hernosand, 6200 bls. sulphite pulp; 300 bls. sulphate pulp.

WOODPULP BOARDS

Jay Madden Corp., Mormacreed, Helsingfors, 1531 rolls, 545 bls. (solid white).

ALBANY IMPORTS

WEEK ENDING JULY 26, 1947

Pagel Horton & Co., Inc., Notre Dame Victory, Husum, 5944 bls. dry sulphate pulp.

Pulp & Paper Trading Co., Notre Dame Victory, Hernosand, 1828 bls. 2nd quality strong sulphite pulp.

Cellulose Sales Co., Notre Dame Victory, Hernosand, 8472 bls. sulphate pulp; 6240 bls. sulphite pulp.

(Continued on page 32)

TRENDS

Office of the PAPER TRADE JOURNAL,
Wednesday, July 30, 1947.

Paper and paperboard production continues high with no easing in demand yet in sight. Prices are firm at top prevailing levels. In fact, most buyers find prices are above those quoted publicly as "contract prices." Usually, special offerings of paper or board at reduced prices turn up as inferior products. Such "fire-sales" are hangovers of a tipsy warborn market. Most manufacturers are currently turning out paper and board of a quality superior to anything they have ever produced. While consumers insist on more and more paper delivered with all possible speed, manufacturers are competing against time to develop paper and board that will meet today's rigid requirements. Recent improvements in the development of individual packaging for such products as breakfast foods, fresh fruit, soap powder (charges for washing machines), etc., has caused a steady increase in the demand for greaseproof papers. While the increased use of wax-laminated sheets for food packaging has also raised requirements for glassine. While the industry is hard pressed to meet demands on all sides some cancellations do appear, but as a rule the market is so diversified that the slack in demand from some customers is taken up by a backlog of demand from other consumers. Kraft, standard size grocery bags, tissues and toweling are still in short supply. Some improvement has been noted in certain types of wrapping, paper cups and some odd-sized paper bags. Wholesalers' sales of paper and its products are said to have reached 358 million dollars in April; approximately 4 percent above sales for March.

The index of general activity for the week ended July 19 rose to 141.5 from 130.5 in the preceding week, compared with 136.4 for the corresponding week in 1946. The index of paperboard production rose to 170.7 from 147.8 in the preceding week, compared with 155.6 for the corresponding week in 1946.

Paper production for the week ended July 19 was estimated at 104.3 per cent, compared with 93.5 for the preceding week, with 102.8 for the corresponding week in 1946, with 89.8 for 1945, with 91.2 for 1944, and with 90.1 per cent for the corresponding week in 1943.

Paperboard production for the week ended July 19 was 97.0 per cent of capacity, compared with 76.0 per cent for the preceding week, with 94.0 for the corresponding week in 1946, with 96.0 for 1945, with 94.0 for 1944, and with 97.0 per cent for the corresponding week in 1943.

The national procurement of pulpwood, with allowances made for the over-all seasonal decline in receipts which usually occurs during the first several weeks of the second quarter, has been maintained on a satisfactory basis, according to regional reports of the Department of Commerce. There are, in fact, no indications of any sectional shortages with the exception of the New England area where the wood accumulation of certain mills has been impeded by inclement weather. The weather elsewhere in the country, however, has been favorable for pulpwood movement although portions of the Pacific Northwest report the arrival of "fire weather" with some retarding of logging operations due to precautionary activities necessitated by lack of rain and a low degree of humidity. Nevertheless, wood inventories in the Northwest are reported as improving gradually, in the tidewater low inventories of the Puget Sound district, in those of the Columbia River and in the stockpiles of pulp and paper mills. . . . Mills which buy their wood in the open market are reported to be following a cautious short-run purchasing policy, expressly to avoid the accumulation of high-priced wood in a period of possibly declining log and stumpage prices. . . . Consumption of pulpwood continues on a high level, substantially above receipts in all areas except the Northeast; it reflects the full scale production prevailing in the pulp and paper industry.

Employment in pulp, paper and paperboard mills in March continued the slow steady increase that has been in progress since the end of the war. Reports from the United States Employment Service covering about nine-tenths of the industry, indicated 177,560 workers in March, a gain of only 700 since February (four-tenths of one percent) and 1,440 more than in January. The increase was accounted for by three-fifths of the reporting plants. Employment in 19 establishments remained unchanged and the remainder experienced minor declines due primarily to material shortages (chiefly pulp), changes in the type of production, and the weeding out of less desirable workers at some plants. Individual plant gains were generally small; only 13 plants added as many as 50 workers during April and May. The industry is already operating near capacity and only limited gains are anticipated in the immediate future. Reporting firms will need approximately 2,320 more workers up to July to meet production requirements. Long range demands, however, may be somewhat greater since many mills are planning substantial facilities expansion. Only about half of the 260 reporting establishments plan to add workers during the next few months. Two-fifths of the plants are now at their desired employment level for current and future operations and plan no increases whatever, and 32 employers forecast minor declines. Five mills account for the bulk of job openings. Remaining needs are small and scattered geographically. Despite the resistance to jobs on night shifts, employers anticipate little difficulty in meeting requirements.

Wood Pulp

A comparison of imports by grades of pulp for the first four months of 1947 and 1946 shows a decline of about 37,000 tons of unbleached sulphate, chiefly attributable to a substantial drop in receipts of this grade from Sweden; this drop was only partially off-set by improved receipts from Canada. Unbleached sulphate made up almost 24 percent of all pulp imports in the January-April period of 1946, but in the same period this year fell to 17 percent of the total. Bleached sulphate rose from 3 percent to 10 percent of the total in the same relative periods, substantial increases in this grade being received from both Canada and Sweden. Imports of bleached sulphite of rayon and special chemical grades showed a moderate over-all increase (5 percent), a decline of around 1,200 tons in Swedish shipments being off-set by a 4,000 ton increase in receipts from Canada. Other bleached sulphite showed a slight gain, as did unbleached sulphite. In both of these grades, increases in Canadian shipments made up for declines in receipts from Sweden.

No. 1 News Up $2; Chicago Price $18

CHICAGO—The Chicago district this week reported a rise of $2 a ton in the price of No. 1 news paper but reports in this area indicated that mill were not rushing to buy news on this basis. The new price was quoted at $18 a ton, f.o.b. Chicago, for news in cars and $16 a ton in trucks, compared with an earlier flat all around level of $16. Dealers raised their paying price to collectors to 10 cents a hundred, said the Chicago Journal of Commerce, setting the price at 30 to 35 cents a hundred weight. The action, it was stated, was taken because the $4 reduction in the news price at the first of July had evidently discouraged collectors to the point where only a small amount of collections were coming in. Here and there were reports that the price increase announced July 23 was actually begun by the dealers without mill support, the latter supposedly having a plentiful supply of news and not needing any more at the present time.

PRICES

With the elimination of price controls on paper, pulp, rags and other materials, the quotations given below once more become indicative of trends in an open market. At the moment they can be of little more, for, while some volume business still is being done under contract at the figures given below, fluctuations representing special conditions are too varied and too frequent to permit prices to be given as representing a wholly stabilized market.

Paper

(Delivered New York)

Standard News, per ton—
Roll, contract ....$90.00 to —
Sheets .....$109.00 " —

Kraft—per cwt.—Carload Quantities

	Zone A, Delivered 40 lb. base weight		
Superstandard Wrapping	$7.00	to	—
No. 1 Wrapping	6.50	"	6.75
Standard Wrapping	6.00	"	6.25
Standard Bag	5.75	"	6.25

Tissues—Per Ream 24x36 (480) 10 lb. Zone 1.

Wh. No. 1 Frd.	$1.65	to	$1.72
Wh. No. 1 M. G.	1.65	"	1.72
Wh. No. 1½	1.48	"	—
Wh. No. 2	1.55	"	—
Kraft Anti-Tar	13.85	"	—
Kraft Unbl.	1.85	"	—
Manila No. 2	1.62	"	—

Toilet—Per Case of 100 rolls—1 M Sheets.

Unbleached	$5.50	to	$6.40
Bleached	6.50	"	7.60

Paper Towels—Per Case of 3750—Zone 1.

Wh. Jr. M'tif'd 9¼x9½	$4.85
Br. Sr. M'tif'd 10x12	3.45
Br. Jr. M'tif'd 9½x9¾	2.95
Br. Jr. Sgl. fold 10x10¾	3.10

Manila—per cwt.—C. l. f. a.

No. 1 Jute Tag	$13.80
Reg. Jute Manila	13.25
No. 1 Manila	9.75

Boards, per ton—

News	$92.50	"	—
Chip	90.00	"	—
Sgl. Mla. L1 Chip*	102.50	"	—
White Pat. Coated*	120.00	"	—
Kraft Liners 42 lb.	95.00	"	—
Binders Boards	126.00	"	—

* Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following prices are representative of distributors' resale prices, all deliveries in Zone 1: Rag Content Bonds and Ledgers—

White, Assorted Items

Bonds, per cwt.	Carton	4 C't'n	Ton
100% Rag Ext. No. 1	$55.00	$50.00	$48.00
100% Rag	46.50	43.00	41.25
75% Rag	35.00	32.50	31.50
50% Rag	31.50	28.75	27.50
25% Rag	28.00	25.50	24.50

Ledgers, per cwt.			
100% Rag Ext. No. 1	$54.25	$50.00	$48.00
100% Rag	46.25	42.50	40.75
75% Rag	36.00	33.25	31.75
50% Rag	31.00	28.00	27.00
25% Rag	27.25	24.75	23.75

Sulphite Bonds and Ledgers—White, Assorted Items

Bonds, per cwt.			
No. 1	$18.75	$16.25	$15.50
No. 2	17.00	15.25	14.50
No. 4	16.00	14.50	14.00

Ledgers, per cwt.			
No. 1	$17.00	$17.00	$16.35
No. 2	17.75	16.25	15.50
No. 4	17.00	15.00	14.25

Free Sheet Book Papers—White, Cased Paper

(Per cwt.)	Case	Ton
No. 1 Glossy Coated	$19.40	$18.60
No. 2 Glossy Coated	18.15	17.35
No. 3 Glossy Coated	17.65	17.00
No. 1 Antique (Water marked)	$14.90	$14.25
No. 2 Offset	15.35	14.70
A Grade E. F.	13.90	13.30
A Grade S. & S. C.	14.40	13.70
B Grade E. F.	Nominal	
B Grade S. C.	Nominal	
C Grade E. F.	Nominal	
C Grade S. C.	Nominal	
D Grade E. F.	Nominal	
D Grade S. & S. C.	Nominal	

Wood Pulp

Domestic mill prices delivered with former OPA freight allowances.

	Per Short ADT
Groundwood	$75.00 to $80.00
Unbleached Sulphite	115.00 " 117.00
Bleached Sulphite	121.00 " 125.00
Bleached Soda	115.00 " 120.00
Unbleached Kraft	112.50 " 120.00
Southern Kraft	90.00 " 102.50

Canadian mill Prices delivered with freight allowances unless otherwise specified:

	Per Short ADT	
Select Unbleached Kraft (no freight allowance)	115.00	" —
Unbleached Sulphite	115.00	" 117.00
Glassine Unbleached Sulphite (no freight allowance)	112.00	" —
Bleached Soda	105.00	" 115.00
Groundwood	75.00	" 80.00
Sideruns Pulping News	75.00	" 80.00
Hardwood and Specialty Grades	Nominal	

Swedish Quotations
Ex. dock, New York

	Per Short ADT
Bleached Kraft	$150.00 to 156.00
Bleached Sulphite	151.00 " 158.50
Unbleached Sulphite	121.00 " 131.00
Unbleached Kraft	116.00 " 126.00

Finnish Quotations
Ex. dock, New York

	Per Short ADT
Bleached Sulphite	$165.00
Unbleached Sulphite	132.50
Unbleached Sulphite (special grade)	137.50
Unbleached Sulphate	132.50
Unbleached Sulphate (special grade)	159.00

New Domestic Cotton Cuttings

(Prices delivered Mill Plus Dealer's Commission)

White Shirt	$11.50 to	$12.00
Light Silesias	7.50	
Unbleached Muslin	11.50 "	12.00
White Back Blue Overalls	8.50	
Blue Overalls	7.75	
Unbl. Fancy Shirt	5.00 "	5.50
Light Percales	6.00 "	6.50
Light Prints	5.25 "	5.95
Washables	4.00	
Bleachable Khaki	6.00 "	6.50
Unbleachable Khaki	5.50 "	6.00
Cottonades	5.00 "	5.50

Old Domestic Cotton Rags

(F.O.B. Shipping Point Plus Dealer's Commission)

	Per 100 lbs.
No. 1 Whites Repacked	$4.50
No. 1 Whites Miscellaneous	4.25
No. 2 Whites Repacked	4.00
No. 2 Whites Miscellaneous	3.50
Blue Overalls	3.75
Thirds and Blues Repacked	3.00
Thirds and Blues Miscellaneous	2.50
No. 1 Roofing Rags	1.35
No. 2 Roofing Rags	1.25
No. 3 Jute Bagging	1.15
No. 4 Brussels and hard back carpets	1.15
No. 5A Roofing Rags	1.15

New Foreign Cotton Cuttings

(Prices delivered Mill)

	Per 100 lbs.		
New Dark Cuttings	$6.00 to		—
New Mixed Cuttings	6.50	"	—
Light Silesias	9.00	"	10.00
Light Flannelettes	8.00	"	9.00
New White Cuttings	13.00	"	15.00
Fancy Shirt Cuttings	9.00	"	10.00
Light Prints	8.00	"	10.00
Bleachable Khaki, No. 1	7.00	"	7.50
Unbl. Khaki, No. 1	6.25	"	6.75

Old Foreign Rags

(F.O.B. New York)

	Per 100 lbs.		
No. 1 White Linens	$14.00 to		16.00
No. 2 White Linens	12.00	"	13.00
No. 3 White Linens	8.00	"	9.00
No. 4 White Linens	8.00	"	9.00
No. 1 White Cottons	10.00	"	12.00
No. 2 White Cottons	8.00	"	9.00
No. 3 White Cottons	6.50	"	7.00
No. 4 White Cottons	5.00	"	5.50
Extra Light Prints	7.50	"	8.00
No. 1 New Light Prints	6.25	"	6.75
Med. Light Prints	5.25	"	5.75
Dutch Blue Cottons	5.25	"	5.50
Checks and Blues	4.00	"	4.25
Linsey Garments	3.00	"	3.75
Dark Cottons	2.50	"	3.00
Old Shopperies	2.50	"	3.00
New Shopperies	2.50	"	3.00

Bagging

(Prices to Mill, f.o.b. N. Y.)

	Per 100 lbs.		
Foreign Gunny, No. 1	$4.75 to		5.00
Domestic Gunny, No. 1	4.25	"	4.50
Light Wool Tares	4.50	"	4.75
Heavy Wool Tares	4.75	"	5.00
Bright Bagging	4.25	"	4.50
Foreign Manila Rope	6.00	"	7.00
Domestic Manila Rope	5.75	"	6.50
Jute Strings	4.50	"	5.00
No. 1 Sisal Strings	5.50	"	6.00
Mixed Strings	1.75	"	2.50

Waste Paper

Prices to Mills
(Dollars Per Ton)
F.o.b. New York, Baled

No. 1 Hard White Envelope Cuts, one cut	$120.00 to $130.00
No. 1 Hard White Envelope Cuts	100.00 " 110.00
No. 1 Hard White Shavings, unruled	100.00 " 110.00
No. 1 Hard White Shavings, ruled	90.00 " 100.00
Soft White Shavings, one cut	100.00 " 110.00
No. 1 Soft White Shavings	85.00 " 95.00
Soft White Shavings, Misc.	65.00 " 75.00
No. 1 Fly Leaf Shavings	55.00 " 60.00
No. 2 Fly Leaf Shavings	50.00 " 55.00
No. 1 Groundwood Fly Leaf Shavings	30.00 " 33.00
No. 2 Mixed Groundwood Fly Leaf Shavings	(nominal)
Mixed Colored Shavings	(nominal)
Mixed Groundwood Colored Shavings	(nominal)
Overissue Magazines	(nominal)
No. 1 Heavy Books & Magazines	25.00 " 30.00
Mixed Books	15.00 " 20.00
No. 1 White Ledger	65.00 " 75.00
New Manila Envelope Cuttings, one cut	100.00 " 110.00
New Manila Envelope Cuttings	65.00 " 75.00
Extra Manilas	35.00 " 40.00
Mixed Kraft, Env. & Bag Cuttings	75.00 " 85.00
Kraft Envelope Cuttings	100.00 " 105.00
Triple Sorted, No. 1 Brown Soft Kraft	65.00 " 75.00
New 100% Kraft Corrugated Cuttings	75.00 " 85.00
No. 1 Assorted Old Kraft	40.00 " 50.00
New Jute Corrugated Cuttings	27.00 " —
Old 100% Kraft Corrugated Containers	(nominal)
No. 1 News	16.00 " 18.00
No. 1 Mixed Paper	15.00 " 17.00
Box Board Cuttings	16.00 " —
White Blank News	75.00 " 80.00
Overissue News	(nominal)
Old Corrugated	28.00 " 30.00
Mill Wrappers	22.00 " 25.00

Twines

All Prices Nominal
(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—India	.26	@	.29
Fine Polished—Fine India	.31	"	.35
Unpolished—Paper Makers	.20	"	.26
Tube Rope	.22	"	.27½
Wrapping	.26	"	.33½
Cotton	.70	"	—

(Hard Fiber)

Mex. Sisal	.21	"	.24
Manila	.33	"	—

(Hemp)

Polished Hemp	.63	"	—

PHILADELPHIA

Domestic Rags (New)

(F.O.B. Eastern Shipping Point)

Shirt Cuttings— New White No. 1	.10½	@	.11
New White No. 2	nominal		
Light Silesias	.07½	"	.08
Black Silesias, soft	.06½	"	.07
New Unbleached	.10½	"	.11¼
Washable Prints	.06½	"	.07
Washable No. 1	.05	"	.05¼
Blue Overall	.07½	"	.08
Cottons—According to grades— Washable Shredding	.03½	"	.04
Fancy Percales	.06¾	"	.07¼
New Black Soft	nominal		
Khaki Cuttings— Unbleachable Cotton Cuttings	.05½	"	.06
Bleachable Cotton Cuttings	.06½	"	.07
Men's Corduroy	.05½	"	.06
Ladies' Corduroy	.05	"	.05½
Cottonades	.05½	"	.06

Domestic Rags (Old)

(F.O.B. Eastern Shipping Point)

White No. 1—Repacked	4.50	@	5.00
Mixed White	4.00	"	4.25
White No. 2—Repacked	3.50	"	3.75
Thirds and Blues— Miscellaneous	2.25	"	2.50
Repacked	2.75	"	3.00
Roofing Stock— Foreign No. 1	nominal		
Domestic No. 1	2.00	"	2.05
Domestic No. 2	1.90	"	1.95
Roofing Bagging	1.90	"	1.95
Old Manila Rope	5.75	"	6.00

Bagging

(F.O.B. Eastern Shipping Point)

Gunny No. 1— Foreign	nominal		
Domestic	4.25	@	4.50
No. 1 Clean Bright— Sisal Strings	.04	"	.04½
No. 2 Clean Bright— Sisal Strings	.03	"	.03¼
Sisal Jute	.02¾	"	.03
Scrap— No. 1	3.25	"	3.50
No. 2	1.75	"	1.85

Wool Tares, heavy	4.00	"	4.25
New Burlap Cuttings	6.00	"	6.50

Old Papers

(F. o. b. Phila.)

Mill Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	$100.00	@	$115.00
No. 1 Hard White Shavings, unruled	100.00	"	—
Soft White Shavings, one cut	90.00	"	95.00
White Blank News	60.00	"	65.00
Soft White Shavings	80.00	"	—
No. 1 White Ledger	75.00	"	80.00
Ledger, colored	60.00	"	65.00
No. 1 Heavy Books & Magazines	40.00	"	45.00
Overissue Magazines	nominal		
New Manila Envelope Cuttings	80.00	"	—
No. 1 Assorted Old Kraft	60.00	"	65.00
No. 1 Mixed Paper	20.00	"	—
Box Board Cuttings	20.00	"	—
Kraft Corrugated Cuttings	nominal		
Old Corrugated	30.00	"	35.00
Overissue News	40.00	"	—
No. 1 News	—	"	30.00

BOSTON

Old Papers

(F. o. b. Boston)

Mill Prices, Baled

No. 1 Hard White Shavings, unruled	7.00	@	8.00
No. 1 Hard White Shavings, ruled	7.00	"	8.00
Soft White Shavings, Misc.	6.25	"	6.50
No. 1 Fly Leaf Shavings	1.65	"	1.80
No. 2 Fly Leaf Shavings	2.00	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	1.25	"	1.50
Mixed Colored Shavings	2.50	"	2.75
New Manila Envelope Cuts, one cut	5.00	"	5.50
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	3.50	"	3.75
Mixed Kraft Env. & Bag Cuttings	3.75	"	4.00
Kraft Envelope Cuttings	3.75	"	4.00
No. 1 Heavy Books & Magazines	2.50	"	2.60
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White and Colored Tabulating Cards	4.25	"	4.50
Groundwood Tabulating Cards	1.35	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	3.50	"	—
No. 1 Mixed Paper	—	"	.95
Overissue News	1.50	"	1.75
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.50	"	—
Jute Corrugated Cuttings	1.07½	"	—
Paper Strings	2.25	"	2.50

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	—	@	4.75
Domestic	—	"	4.75
Sisal Rope No. 1	6.00	"	—
Sisal Rope No. 2	5.50	"	—
Mixed Rope	5.25	"	—
Mixed Strings	2.00	"	2.50
Transmission Rope—			
Foreign	(nominal)		
Domestic	3.00	"	3.50
Manila Rope—			
Foreign	(nominal)		
Domestic	6.25	"	—
Soft Jute Rope	5.00	"	5.25
Jute Carpet Threads	6.00	"	—
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	—	"	4.75
Domestic	—	"	4.87½
South America	5.25	"	—
Wool Tares—			
Foreign	4.50	"	—
Domestic	4.50	"	—
Aust. Wool Pouches	5.00	"	5.25
New Zealand Wool Pouches	5.25	"	5.50
New Burlap Cuttings	6.00	"	6.50
Heavy Baling Bagging	5.25	"	5.75
Paper Mill Bagging	3.50	"	3.75
No. 1 Roofing Bagging	1.75	"	—

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.08	@	—
Fancy Percales	.07½	"	.08
New White No. 1	.11	"	.11½
New Light Flannelettes	.08	"	.08½
Canton Flannels, Bleached	.10	"	.11
Underwear Cutters, Bleached	.10	"	.11
Underwear Cutters, Unbleached	.11	"	.12
Silesias No. 1	.08	"	.08½
New Black Silesias	.05	"	—
Red Cotton Cuttings	.05	"	—
Blue Overalls	.08½	"	.09
Soft Unbleached	.11	"	.12
Blue Cheviots	.08½	"	.09
Fancy	.06	"	—
Washable	.06	"	—
Khaki Cuttings	.06½	"	.07¼
Corduroy	.03½	"	—
Khaki Canvas	.06¼	"	.06¾
B. V. D. Cuttings	.10½	"	.11½

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	3.80	@	—
Miscellaneous	3.20	"	—
White No. 2—			
Miscellaneous	2.65	"	—
Twos and Blues, Repacked	2.20	"	—
Old Blue Overalls	2.25	"	2.50
Thirds and Blues, Repacked	2.20	"	—
Miscellaneous	1.80	"	—
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	2.00	"	—
No. 2	1.90	"	2.00
No. 3	1.35	"	—
No. 4	1.35	"	—
No. 5, Quality A	1.35	"	—
Quality B	1.20	"	—
Quality C	.95	"	—
Old Manila Rope	6.00	"	—

Foreign Rags

(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)

Mill Prices, Baled

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	$110.00	@	$120.00
No. 1 Hard White Shavings, unruled	105.00	"	115.00
No. 1 Soft White Shavings	80.00	"	95.00
No. 1 White Ledger	55.00	"	65.00
No. 1 Heavy Books & Magazines	40.00	"	43.00
White Blank News	43.00	"	49.00
Mixed Kraft Env. & Bag Cuttings	75.00	"	85.00
No. 1 Assorted Old Kraft	45.00	"	55.00
Overissue News	28.00	"	—
No. 1 News	18.00	"	—
No. 1 Mixed Paper	12.00	"	—
Old Corrugated	30.00	"	—
Mill Wrappers	22.00	"	—

AMYLIQ
An enzyme product for preparing superior coatings and tub-sizings from starch.
WALLERSTEIN COMPANY, INC. 180 Madison Avenue, New York 16, N. Y.

MARKETS

BLANC FIXE—Market steady supplies adequate, deliveries fair. Pulp is currently quoted at $55 per ton, in barrels, car lots, at works; and $60 less car lot same basis.

BLEACHING POWDER—Supplies short although paper mill demand has eased up. Shipments improved. Quotations are unchanged. Prices on bleaching powder range from $3.00 to $3.75 per 100 pounds.

CASEIN—Current prices on processed acid precipitated casein are quoted around 24 to 26 cents per pound for domestic grades and 28 to 32 cents for imported grades f.o.b. shipping point.

CAUSTIC SODA—Market continues tight although some easing is now in sight. Solid caustic soda is reported at $2.50 to $2.75 per 100 pounds; flaked and ground offered at $2.90 to $3 per 100 pounds, car lots, at works.

CHINA CLAY—Demand continues heavy, supply tight. Domestic filler clay is currently $9 to $11 per ton, car lots. Coating clay is currently $15 to $30 car lots. Imported clay is currently quoted at from $18 to $35 per ton, in car lots, export warehouse.

CHLORINE—Strong demand continues in a tight market. Lack of tank cars continues to hamper deliveries. Quantities unchanged. Chlorine is currently quoted at $2 to $3.50 per 100 pounds.

ROSIN—Gum Rosin in drums per 100 pounds, net, in yard New York, car lots, B, D, E, $8.85; F, G, H, I, K, M, $9.01; N, $9.05; WG, $9.06; WW, $9.25. Wood Rosin per 100 pounds, l.c.l., f.o.b. N. Y., B, $6.95; FF, $8.20, G, H, I, $8.35; WG, $8.65; WW, $8.81; X, $8.91.

SALT CAKE—Demand continues to increase as supply shows little improvement. Prices remain unchanged. Domestic salt cake is quoted at $20 to $26 per ton in bulk. Chrome salt cake is quoted at $20 to $26 per ton.

SODA ASH—Demand active as supplies continue short, previous orders filled. Contract orders prevail at the same high levels. Current prices, car lots, per 100 pounds, are as follows: in bulk, $1.08; in paper bags, $1.20; and in barrels, $1.60.

STARCH—Capacity production absorbed by active demand, export demand eased up. Starch prices continue strong with the pearl grade quoted at $5.92 per 100 pounds; powdered starch at $6.03 per 100 pounds, car lots, Chicago.

SULPHATE OF ALUMINA — Active demand covered by fair supplies. Quotations continue unchanged. The commercial grades are quoted at from $1.15 to $1.30 per 100 pounds, in bags, car lots, f.o.b. works. Iron free is quoted at $1.95 to $2.25 per 100 pounds, in bags at works.

SULPHUR—Plentiful supplies to meet active domestic and export demands. Annual contracts are quoted at $18 per long ton, f.o.b. mines; the price f.o.b. at Gulf Ports is $19.50 per long ton.

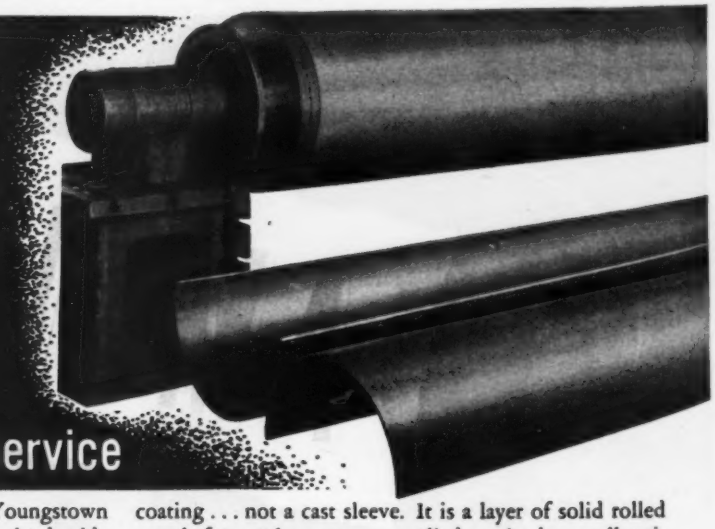
TALC—Domestic and French grades are moving in fair volume with prices steady. Domestic grades are currently quoted at from $16 to $30 per ton at mines: Canadian at $35 to $45 per ton. All prices in car lots.

For NEW ROLLS
or RECOVERED ROLLS

WELDCO

offers

Longer Life • Better Service



● WELDCO-Covered Rolls, made by The Youngstown Welding & Engineering Company, have received wide acceptance in industry. For numerous applications in the pulp and paper, textile, food, and chemical fields, WELDCO Rolls covered with Monel, Nickel, Inconel, and other alloys are standard equipment.

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Imports

(Continued from page 26)

Price & Pierce, Ltd., Notre Dame Victory, Wallvik, 12000 bls. dry sulphate pulp.

PHILADELPHIA IMPORTS

WEEK ENDING JULY 26, 1947

Madden Reeve Angel & Co., Inc., Mormacreed, Helsingfors, 1636 rolls newsprint.

Pulp Sales Corp., Mormacreed, Helsingfors, 300 tons prime unbleached strong sulphite pulp.

Jay Madden Corp., Mormacreed, Helsingfors, 517 rolls solid white woodpulp boards.

NORFOLK IMPORTS

WEEK ENDING JULY 26, 1947

Darmstadt Scott & Courtney, Gainesville Victory, Antwerp, 68 bls. old waste bagging.

E. J. Keller Co., Inc., Gainesville Victory, Antwerp, 55 bls. bagging.

(———), Gainesville Victory, Antwerp, 58 bls. old bagging.

Kimberly Engineers Draw Crowd

NEENAH, Wis.—More than 200 persons attend the picnic of the Kimberly-Clark Engineers' Club last week at Stroebe's Island. A softball contest was held, and cards were played in the evening.

Warren engineers' constant research and field study of actual operating conditions have resulted in the Warren Type L Liquor Pumps . . . pumps designed and built to handle hot and corrosive liquors with a minimum of operating and maintenance expense.

Let's look into the construction features:

UNIT CONSTRUCTION . . . The case is secured and supported on heavy pedestal bearing case. This allows the casing to be turned to get any desired position of discharge opening.

ACCESSIBILITY . . . To remove the rotating member, it is not necessary to break a joint in either suction or discharge line or to move the motor.

SHAFT . . . Extra heavy, non-vibrating and non-deflecting shaft means long service under severe operating conditions.

STUFFING BOX . . . Extra long, with large water chamber for effective water cooling. Impeller keeps the pressure on the box practically the same as at suction inlet. Bolted two-piece gland with generous space between box and bearing facilitates packing.

BEARINGS . . . The ball bearings are extra large and are arranged for either oil or grease lubrication.

These features of sound design and sturdy construction . . . plus many others . . . are the basis of the dependable, long-range economy of the Warren Type L Pump.

Warren engineers will be glad to give you complete information

PP9½

WARREN PUMPS

WARREN STEAM PUMP COMPANY, INC., Warren, Massachusetts

Report from Germany

(Continued from page 24)

Sons in Trebsen, Rosental, Kuebler and Niefhammer in Kriebstein, Sebnitz, Bautzen, Wernsdorf, Hugo Hoesch in Koenigstein, Felix Schoeller & Bausch in Neu-Kaliss, and others. Of the more important plants reported to be in operation are the Otto Guenther factory in Greiz and Brueckner & Company in Calbe on the Saale, makers of fine paper.

The dismantling of the large mills mentioned above has as a result been that the small plants remaining in existence must change over their production to making mainly newspaper which is most uneconomic. The large cellulose mills in Koenigsberg are supposed to be working again.

In the Russian zone about two hundred plants are supposedly operating. All of them are small ones. They produce about 80,000 tons of paper per year. They hope to raise this production to about 150,000 tons per year in about 2 years. During the severe winter, the production in this zone also fell off considerably due to coal and wood scarcity, although not to the extent of the western zones.

Of the present total capacity of the German paper industry, the production is divided between zones approximately as follows:

U. S. zone	15.5%
British zone	23.8%
French zone	7.2%
Russian zone	53.5%
Total	100.0%

Metric ton = 2204.6 lb.

* Zellstoff — direct translation is cellulose. Believed to be shredded wood cooked in carbonate of soda and sulphuric acid salt baths. Further used as a basis for a good many synthetics and plastics.

OBITUARY

Harry Kovner

Harry Kovner, sixty-nine, retired New York paper manufacturer, died Sunday of a heart ailment while visiting his daughter, Mrs. Ernest Bobys in Corpus Christi, Tex., according to word received here yesterday. His home was in Miami, Fla. He formerly lived in Brooklyn.

He was a founder of the Ravenswood Paper Mill Company, which he dissolved in 1938. He was active in the support of Jewish welfare organizations in Brooklyn, and had published a book of verse and several poems.

Surviving are his widow, Mrs. Florence Kovner; his daughter and three sons, Bernard J., Milton S. and Walter C. Kovner.

Charles E. Foley

NASHUA, N. H. — Charles E. Foley, head of sales research for Nashua Gummed and Coated Paper Company, died suddenly on July 18th after a brief illness.

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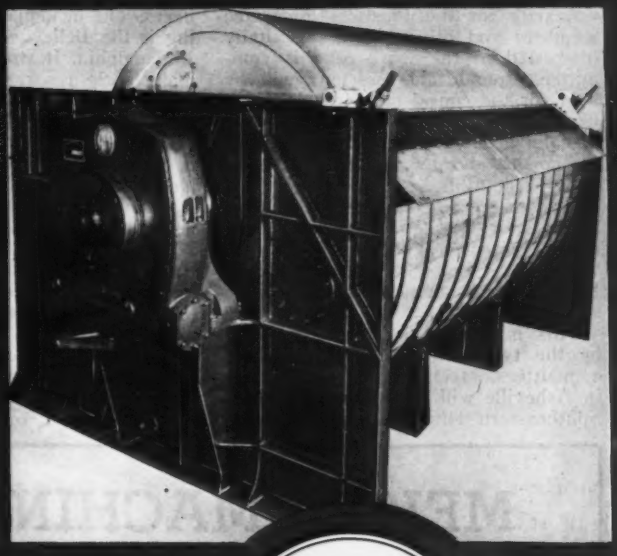
. . . Keeps Valuable Stock in Your Mill

. . . Keeps Public Officials off Your Neck

Operationally, the Oliver Vacuum Saveall offers these advantages among others:

- . . . Handles wet breaks as well as white water without separate system.
- . . . Shows maintenance and labor cost as low as 3.5 cents per ton.
- . . . Positive clarification; where warranted, exceptional clarity obtainable with small additional operating cost.

If you want to look into the Saveall that is already serving several hundred companies, investigate the Oliver Vacuum Saveall. Bulletin F-109 gives further details.



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TAPPI Sets Program For Fall Meetings

NEW YORK—Since an earlier announcement was made there have been some changes made in the scheduling of the fall meetings of the Technical Association. The meetings as now planned are as follows:

Fundamental Research: (Appleton, Wis., September 3-5, 1947).

The Chemical Components of the Fibrous Raw Materials of the Pulp and Paper Industry covers the scope of this meeting. The program is being organized on the plan followed in panel discussions. This procedure stems from the belief that a number of the classic polemics and much of the confusion in the literature in the field of cellulose and lignin research might have been avoided or at least minimized had means been provided for adequate discussion of points at issue. Principal speakers are being invited to present in brief those subjects in which there is general agreement and in greater detail the phases of these subjects about which there is uncertainty or actual disagreement.

Tentative sessions are being considered in the fields of cellulose, the hemicelluloses, the gums and mucilages, lignin, the tannins, the coloring matter in wood, and the resins and resinols.

Plastics: (Syracuse, N. Y., September 25-26, 1947).

This meeting is being prepared primarily for the Plastics Committee members and others who are vitally interested in the work of this committee. Round table sessions will be held for the consideration of 1. lignin plastics, 2. resin analysis, 3. problems of lamination and conversion, and 4. new resins and new applications.

E. C. Jahn is general chairman of this meeting. Sessions will be held at the New York State College of Forestry, Syracuse.

Alkaline Pulping and Chemical Products: (Asheville, N. C., October 9-11, 1947).

This is a joint meeting sponsored by the two, abovementioned TAPPI committees. Meeting at the same time in Asheville will be the Southern and Southeastern Divisions of the Superintendents Association. Although all technical sessions will be held separately, the social programs and mill visits will be conducted jointly. Visits will be made to the mills of the Ecusta Paper Company at Pisgah Forest, N. C., and the Champion Paper & Fibre Company at Canton, N. C.

Sessions by the Alkaline Pulping Committee will cover analysis of stack gases, study of sewer losses, and a proposed method for improving the chemical recovery in the sulphate pulping process.

The Chemical Products session will include a consideration of seasonal and geographical variations in tall oil consumption, chemical products from sulphate turpentine, and tall oil analysis. Other subjects are being considered.

Fibrous Agricultural Residues: (Alton, Ill., October 23-24, 1947).

This meeting sponsored by the TAPPI Fibrous Agricultural Residues Committee is to be held at Alton, Ill., at the invitation of Marvin W. Swaim, vice president of the Alton Box Board Company. Visits will be made to this mill and also to the plants of the Owens-Illinois Glass Company and Western Cartridge Company.

The sessions will cover the moisture testing of straw with the Delmhorst instrument; report on mill scale straw preservation trials.

The Second Engineering Conference of the Pulp and Paper Industry: (Philadelphia, Pa., Nov. 3-5, 1947).

An unusually fine program has been arranged for paper and pulp mill engineers. The headquarters for this meeting is the Bellevue-Stratford Hotel in Philadelphia. It would be advisable to make early reservations since the attendance is expected to be quite large. Since the First Conference was held in Milwaukee last fall a large number of chief engineers and their associates have become members of the Technical Association. A great effort has been made by J. W. Hemphill of Johns-Manville, general chairman of the Engineering Division and his committee chairmen to organize a program that will justify the time of busy engineers in attending this meeting.

Acid Pulping: (Originally scheduled to be held in Minneapolis, Minn. in September 1947). This meeting will not be held in 1947.

Bolton 1948 Awards Stress Safety Theme

NEW YORK—The American Pulp and Paper Superintendents Association, which conducts the Bolton Award Contests, has chosen as the subject of this year's competition, "What is your plan for improving our safety record in the pulp and paper industry?" The prizes in this Third Bolton Award amount to $3,250 in cash. First prize, $1,000; second prize, $750; third prize, $500. In addition, in each of the ten divisions of the Association one prize of $100 will be awarded.

Rules of the contest call for manuscripts, preferably of not over 1,500 words, to be mailed before October 1 to George W. Craigie, secretary-treasurer of the Superintendents Association, 220 East 42nd St., New York 17, N. Y. Complete details governing the competition may be had on request to this address.

The National Safety Council's report for 1945 accident rates in the paper and pulp industry indicates that men do not work safely in the industry.

As compared with forty major crafts, the frequency rate in pulp and papermaking was higher than that in twenty-nine other industries.

Munk Heads Pulp Group Of National Safety Council

POTSDAM, N. Y.—Cecil J. Munk, safety engineer at the Racquette River Paper company mills, has received another appointment with the National Safety Council, as chairman of the pulp manufacturing section.

Mr. Munk has been a member of the executive committee of the pulp and paper section of the National Safety Council for some time. Recently changes have been made in the set-up of the pulp and paper section of the executive committee, and it has been divided into four sections, according to Mr. Munk. The four sections now include pulp-wood logging, pulp manufacture, paper manufacture and paper converting.

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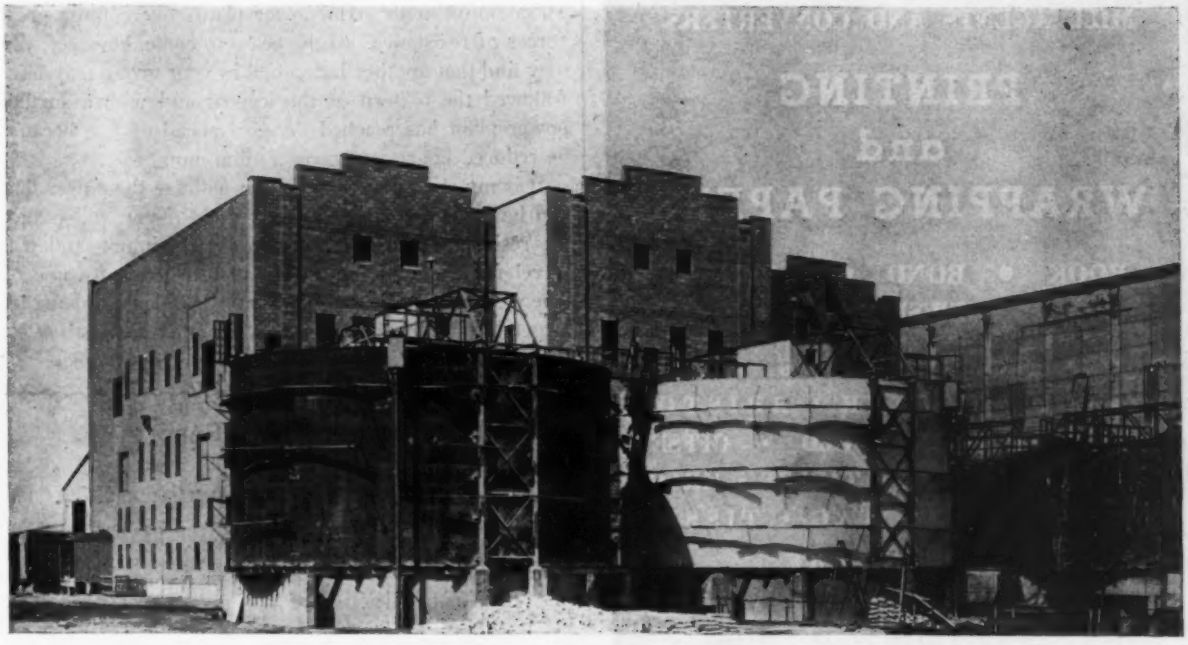

CONSTRUCTION COMPLETED — PRODUCTION BEGUN! *Here's the new Precipitated Calcium Carbonate plant at Wyandotte, Michigan. It is now going full blast to meet the great demand of the paper industry for this superlative coating pigment.*

YES, it's great news for many paper-makers that a bigger supply of Wyandotte Precipitated Calcium Carbonate is now assured.

The demand has been terrific — for you paper-makers *know* that this Wyandotte product has the quality and uniformity you require. Wyandotte spent $2,000,000 to meet your needs — so you can keep *your* customers happy with the best in coated paper.

Technical bulletins about the use of Wyandotte Precipitated Calcium Carbonate are yours on request.

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Make Great Atlantic in New York your Eastern Sales Headquarters.

DIGESTED

I do want to call your attention particularly, however, to the fact that the rate of speed at which you travel and the distance that you go will be as much governed by the resistance you encounter as by the power you apply. It is recognized that the power plant of each individual varies in capacity, but each individual can exert a great deal of control over the resistance he will have to surmount.

A smile and a sense of humor are the lubricants of human relations. A friendly attitude on the part of all the people who know you will reduce your resistance. Some of you may follow the pattern of an automobile or a locomotive with great power plants overcoming great forces of resistance. In the years to come, however, you may find that another individual in your group may have followed the pattern of the iceboat and with a smaller power plant has reached the goal ahead of you because he reduced his resistance to a minimum.

It is my wish that each of you will use the power that you have to the maximum, that each of you will reduce the resistance you encounter to the minimum, and will travel far and wide and accumulate a great fortune of true wealth.—By R. A. HAYWORD, President, Kalamazoo Vegetable Parchment Company, *from an address before the Chrysler Institute of Engineering.*

Production Ratio Report*

(Production as per.cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1947		Corresponding Weeks—1946	
June 14	107.2	June 15	104.0
June 21	106.1	June 22	106.2
June 28	103.7	June 29	105.5
July 5	62.7	July 6	61.1
July 12 (Revised)	93.5	July 13	95.2
July 19	*104.3*	July 20	102.8

COMPARATIVE MONTHLY SUMMARIES

1946						1947	
Jan.	94.7	June	104.6	Nov.	105.5	Jan.	102.1
Feb.	98.4	July	94.0	Dec.	97.0	Feb.	105.9
Mar.	104.4	Aug.	104.7			Mar.	106.1
Apr.	102.7	Sept.	101.3	Year Avg.	101.1	Apr.	105.1
May	100.7	Oct.	106.4			May	106.2
						June	*106.0*

COMPARATIVE YEARLY SUMMARIES

	1940	1941	1942	1943	1944	1945	1946	1947
Year to Date	86.9	93.4	95.7	87.7	87.3	87.5	99.2	*103.5*
Year Average	85.6	97.4	90.4	87.8	88.1	89.4	101.1	

PAPERBOARD OPERATING RATIOS†

Current Weeks—1947		Corresponding Weeks—1946	
June 14	103	June 15	98
June 21	102	June 22	97
June 28	102	June 29	98
July 5	78	July 6	70
July 12	76	July 13	87
July 19	*97*	July 20	94

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1946	90	91	100	99	94	97	89	99	96	100	99	92	96
1947	99	103	101	100	101	*101*							

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

EDITORIAL

Equitable Basis

Some times it seems as though the engaging conceits of the late W. S. Gilbert and the smooth-flowing tuneful rhythms of Sir Arthur Sullivan in their burlesque of Governmental agencies of an earlier Great Britain were cut off too soon. The comedies of errors that were pilloried with all the glamor of pirates and fairies and the Royal Navy as backgrounds for their melodious satires seem now to be the forerunners of other equally sad comedies that have been handed down to this generation.

In witness of such a state of affairs comes now Senator James E. Murray, (Dem. Montana) who has a solution of the problem involving distribution of newsprint paper to those who want more than they are able to get at present. Just before Congress adjourned late last week the Hon. Murray, with a perfectly straight face introduced into the Senate a bill that has all the earmarks of some special private interest that may have successfully appealed to the Senator's warm interest. This bill would set up a new agency within the Department of Commerce to buy and sell newsprint "on some equitable basis." This agency is to be empowered to buy up to five percent of newsprint shipped in 1948, at or near, prevailing price. It is then to establish in its own wisdom a system of distribution to insure from this production percentage equitable supplies to publishers and other users of newsprint.

The Senator, apparently, is brimful of confidence in the ability of a government agency's fiat to accomplish an end that will provide supplies enough and distribution so even so that everybody will call them equitable.

The Buyer Looks at Pulp

It looks as though we will have confusion as to supply, demand and prices in the pulp picture for some time yet. Indefinite as it may be this pronouncement by a west coast authority on pulp, as viewed from the buyer's side of the table, may be taken as fairly definitive of a state of affairs for which there are as many views and opinions as there are interested experts to interpret them.

The speaker was H. L. Weber of the Fibreboard Products Company, San Francisco, in a short review of the market and its prospects for the National Association of Purchasing Agents.

Total domestic pulp production, he finds, is being maintained at the past high level. Imports are increasing, but so are exports, although to a lesser degree in tons. In spite of these increases in total pulp supply, the market pulp picture, if changed at all, is worse than it was a month ago.

Pulp prices are confused too. Mr. Weber tells his fellow purchasing agents. Domestic and Canadian producers, for the most part, are maintaining second quarter prices for the third quarter and, in some instances, for the balance of the year. Swedish prices are reported up $10 to $15 a ton. Groundwood prices broke recently and are definitely on the weak side.

There is still confusion on how much pulp Sweden will ship in this year, he adds. There are constant reports that the Swedes, even though their quoted prices are higher than our domestic prices, are selling pulp in this country below what they can get in other markets.

"With part of the economists prognosticating one thing, and the rest of them something else, it is little wonder that pulp buyers seem to prefer waiting to see what is going to happen before entering into their heavy commitments for the balance of the year. There is, however, definite resistance to the fantastic pulp prices that have been and are being quoted. Could be this confusion probably will be with us until the economists, politicians and foreign diplomats start staying 'yes' and 'no' instead of 'perhaps' and 'maybe,' and each understands what the other means."

Is it any wonder that there seems to be a growing feeling that domestic demand will not continue at present high levels during the balance of the year; that, as a natural result of this, the requirement for pulp will be reduced to where it will more nearly equal the supply. Let's not go overboard that this will result in a weak pulp market, but it should most certainly check further prices increases and perhaps even result in lower price offerings, particularly from European producers, before the end of the year.

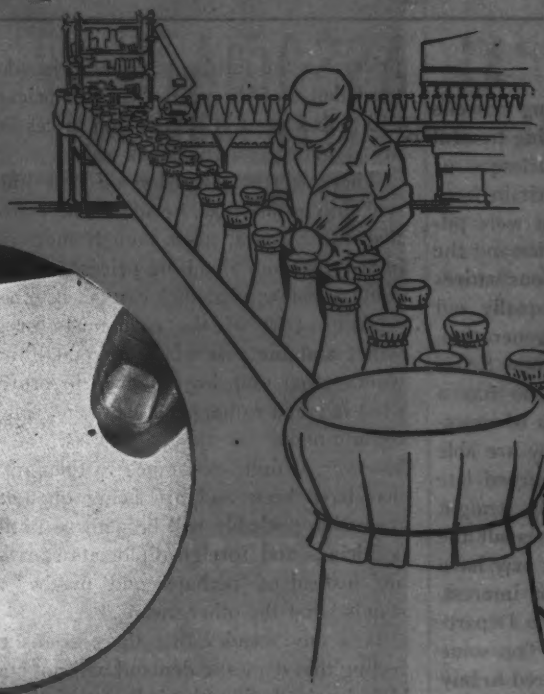
Pest Control

Among achievements of the Eightieth Congress as it closes its records for the year a step in the direction of tree conservation is to be chalked up in the record. A bill which is expected to be a potent measure for the reduction of needless losses and increasing costs from insect pest and disease in the nation's forests has been enacted into law. Earlier attempts to have such a law passed had come to nothing in two previous sessions. With its passage at this session the bill becomes a stepping stone upon which to start the long trail to effective elimination of the destructive forces which so wastefully have contributed to the failure of the national tree wealth. It now becomes opportune that every interest cooperate in the program that is authorized. There can be no more limit of interest than there is any respect for ownership boundaries on the part of marauding insects.

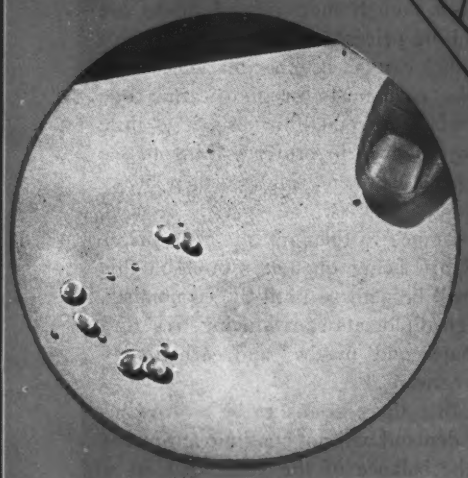
W. L. Cook

EDITOR

Want IMPROVED PAPER PLIABILITY? IMPROVED WATER RESISTANCE?



Papers treated with ALWAX Sizes resist penetration better, shed water more efficiently.



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ALWAX Sizes improve, too, water resistance, water shedding, and resistance to penetration by printing inks and other organic liquids. Here, again, a small quantity of ALWAX Sizes will do the job for you . . . and do it efficiently and economically.

Would *your* paper or paperboard products *handle* and *sell* better . . . do their work better . . . if you could increase their pliability and water resistance? Then ALWAX Sizes are your quick, easy and economical answer. Cyanamid will gladly work with you in the proper application of ALWAX Sizes to your grades of paper and methods of operation. We'll be glad, too, to show you how paper chemicals can help you solve other paper or packaging problems.

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SECTION OF THE

TECHNICAL ASSOCIATION
OF THE PULP AND PAPER INDUSTRY

122 E. 42nd ST., NEW YORK 17, N. Y. Edited By R. G. MACDONALD, Secretary

Organic Nitrogen in Paper*

Revision of TAPPI Official Standard T 418 m-45

Scope

This method is based on the Gunning *(1)* modification of the well known Kjeldahl procedure. It is used to determine glue, casein, urea-formaldehyde resins, Melamine resin, and other nitrogenous organic materials in paper. The nitrogen determined by the method does not include nitrogen in ntro compounds or nitraates, but does include any ammoniacal nitrogen.

Apparatus

A Kjeldahl digestion and distillation apparatus is required for this determination. Apparatus with ground-glass joints, preferably of the interchangeable type, is desirable. An 800-ml. Kjeldahl flask is a suitable size.

Reagents

A. *Sodium Sulphate,* C. P. anhydrous, powered.
B. *Metallic Mercury* or *Mercuric Oxide,* C. P.
C. *Selenium Oxychloride* ($SeOCl_2$), C. P.
D. *Sulphuric Acid,* C. P. conc.
E. *Zinc,* granulated or stick.
F. *Sodium Hydroxide Solution,* approximately 50% by weight. Dissolve 1030 grams of C. P. NaOH in 1 liter of water.
G. *Sulphide or Thiosulphate Solution.* Any of these three solutions may be used: 40 grams of commercial K_2S, or 40 grams of Na_2S, or 80 grams of $Na_2S_2O_3.5\ H_2O$ (thiosulphate crystals) dissolved in 1 liter of water.
H. *Methyl Red Indicator,* 1% alcoholic solution.
I. *Standard Sulphuric* or *Hydrochloric Acid,* 0.1 *N,* accurately standardized.
J. *Standard Sodium Hydroxide,* 0.1 *N,* standardized against the standard acid, using methyl red indicator.

Test Specimen

The specimen shall consist of 2 grams of air-dry paper, the moisture content of which shall be determined according to TAPPI Standard T 412 m-42. The specimen may be obtained by cutting small strips from different portions of the test sample in such a way as to be representative of it. The strips shall be cut into pieces approximately 6 mm. (0.25 inch) square.

Procedure

Place the specimen, weighed to an accuracy of 1 mg., in the Kjeldahl flask and add 10 grams of powdered anhydrous Na_2SO_4, 0.15 gram (5 drops) of $SeOCl_2$, about 0.5 gram of metallic mercury (or 0.55 gram of HgO) and 25 ml. of conc. H_2SO_4. Place a small glass funnel in the neck of the flask, heat gently under a hood over a flame until frothing has ceased and then digest with increasing temperature until oxidation is complete. This generally requires 1 to 2 hours after the mixture becomes clear and colorless, or nearly so.

Cool and dilute with about 300 to 325 ml. of water. Add about 2 grams of stick or granulated zinc to prevent bumping during the distillation (the stick zinc may be used for several distillations) and 25 ml. of the sulphide or thiosulphate solution. (When $Na_2S_2O_3$ is to be used, mix it first with the NaOH solution so that they may be added together.) Add 50% NaOH solution to the contents of the flask in such amount (usually 55 ml.) that there is an excess of 5 ml. present. This solution must be poured carefully down the side of the flask so that it does not mix with the acid contents. The total volume of the solution should be about 400 ml.

Immediately connect the flask to a condenser having the discharge end of its delivery tube just beneath the surface of a measured amount of 0.1 *N* H_2SO_4 or HCl diluted to 100 ml. (25 ml. of 0.1 *N* acid are usually sufficient). Mix the contents of the Kjeldahl flask by swirling the flask, slowly at first and then more rapidly. Start heating the flask immediately and distill the contents for about 45 minutes, taking care to avoid spurting. The total volume of the distillate should be about 200 ml.

Titrate the contents of the receiver flask with 0.1 *N* NaOH, using methyl red indicator. Make a blank determination by conducting the entire procedure, using only the reagents. Calculate the percentage of nitrogen by the formula:

$$\text{Nitrogen, } \% = \frac{(V_2 - V_1) \times N \times 0.014 \times 100}{W};$$

where V_1 = ml. NaOH to titrate distillate from determination,
V_2 = ml. NaOH to titrate distillate from blank,
N = normality of standard NaOH solution,
and W = weight in grams of sample on moisture-free basis.

The percentage results of duplicate determinations of nitrogen should agree within 0.02.

* This revision presented by The Chemical Methods Committee has been approved by the Standards Committee. Criticisms are earnestly requested and should be sent to R. G. Macdonald, Secretary, Technical Association of the Pulp and Paper industry, 122 E. 42nd St., New York 17, N. Y. Reprints of this standard may be obtained from the Secretary at 25 cents each.

Report

The amount of nitrogen shall be expressed as a percentage on the moisture-free paper to the nearest 0.01. If it is desired to report the percentage of a specific nitrogenous organic material such as glue, casein, urea formaldehyde resins, etc., the percentage shall be calculated by multiplying the percentage of nitrogen by the appropriate factor given below:

Material	*Factor*
Glue	5.6
Casein	6.3
Urea formaldehyde (Uformite 467)	4.13*
Urea formaldehyde (Uformite 470	3.41*
Melamine (Parez 607)	2.6*

* Factor supplied by manufacturer.

Note: As these factors vary with different kinds and grades of material, they should be determined whenever the nitrogenous material is available; and whenever possible the nitrogen in the paper before addition of the nitrogenous materials should be determined and substracted from the total nitrogen found. The factors are not applicable if more than one nitrogenous organic material is present.

Additional Information

1. Where a large number of determinations is required or where the available sample is limited in amount, the method proposed by Henwood and Garey *(2)* may be found more convenient and equally satisfactory. This method has been further perfected by the Hengar Co. of Philadelphia, Pa. who have provided special apparatus for it. This modification requires only about 0.1 gram of sample, uses 0.02 *N* acid and alkali, and employs "selenized granules" as a catalyst. It is claimed that the Hengar method, using special apparatus, requires only about 10 minutes digestion with H_2SO_4. However, each operator should determine the minimum time of digestion necessary for complete oxidation under the conditions he employs.

2. The two important factors in the determination of organic nitrogen are the type of catalyst employed and the time of digestion. Shirley and Becker have shown *(3)* that the best catalyst for difficultly oxidizable nitrogenous compounds such as nicotine and quinoline is a combination of Hg and $SeOCl_2$. To cover all contingencies, therefore, this catalyst is recommended.

Copper sulphate, mercury, and a combination of these are also used as catalysts.

Literature Cited

1. Assoc. Official Agr. Chemists, "Methods of Analysis," 6th ed., p. 27 (1945).
2. *J. Franklin Institute* 122, No. 4:531-538 (1936).
3. *Ind. Eng. Chem., Anal. Ed.* 17:437 (1945).

TAPPI Notes

Karl R. Kretlow, formerly of the Waterproof-Ohio Paper Company, is now chief chemist for the Pollock Paper & Box Company, Dallas, Texas.

George A. Oechsle, Jr., formerly of the New York State College of Forestry, is now taking the training program of the Robert Gair Company, Piermont, N. Y.

Frank B. Lake, formerly of the Detroit Sulphite Pulp and Paper Company, is now chemical engineer for the Specialty Converting Company, Inc., 405 Lexington Ave., New York 17, N. Y.

H. O. Teeple has succeeded F. L. LaQue as official representative of the International Nickel Company in the Technical Association.

The TAPPI Delaware Valley Section which formerly met on the first Friday each month will hereafter meet on the fourth Thursday, beginning in September.

New TAPPI Members

The Executive Committee of the Technical Association of the Pulp and Paper Industry has elected the following to membership:

John W. Berriman, General Manager, The Inveresk Paper Co. Ltd., Musselburgh, Midlothian, Scotland. He attended Dartford Technical College, Kent.

Robert E. Brown, Assistant Manager, Rayonier, Inc., Hoquiam, Washington, a 1920 graduate of Miami University, with a Ph.D. degree from Iowa State College.

William E. Bryden, Chemical Engineer, Ernest Scott & Co. Ltd., London, S.W. 1, England, a 1938 graduate of the Imperial College of Science and Technology.

Rolf O. Christiansen, Superintendent Groundwood and Paper Mill, A. Ahlstrom Osakeyhtio, Warkaus, Finland, a 1938 graduate of the Technical University, Helsingfors.

Lee E. Eberhardt, Design Engineer, Bauer Bros. Co., Springfield, Ohio, a 1935 graduate of Case School of Applied Science, with an M.S. degree.

Robert B. Fellows, Sales Manager, Reichhold Chemicals, Inc., Tuscaloosa, Alabama, a 1936 graduate of Michigan State College.

Carl L. Hackbarth, General Superintendent, Sociedad Agricola Paramonga, Supe, Peru.

Walter L. Hendrix, Director, Herty Foundation Laboratory, Savannah, Georgia.

Harold M. Morris, General Superintendent, Mobile Paper Mill Co., Mobile, Alabama, a 1927 graduate of Cornell College, with an M.S. degree from Carnegie Institute of Technology.

Ralph K. Nelson, Assistant Board Mill Superintendent, Wood Conversion Co., Cloquet, Minnesota, a 1940 graduate of the University of Minnesota, with an M.F. degree from Yale University.

John H. Payne, Assistant to Packaging Supervisor, Continental Foods, Inc., Hoboken, New Jersey, a 1932 graduate of Hamilton College.

John A. Pietrowski, Chemist, Sealright Co., Inc., Fulton, New York, a 1935 graduate of Syracuse University.

Geoffrey A. Pyner, Assistant Chief Chemist, The Whakatane Paper Mills Ltd., Whakatane, New Zealand. Received Silver Medal in Paper Making, 1939, from City and Guilds of London Institute.

Arvid B. Rasmussen, Student, A/S Katfos Fabriker, Geithus, Norway, a 1943 graduate of College of Drammen.

James F. Stevenson, Jr., Chemical Engineer, The Mead Corporation, Chillicothe, Ohio, a 1942 graduate of Grove City College.

Paul J. Thoma, Consultant, Time, Inc., Kalamazoo, Michigan, a 1927 graduate of the University of Illinois.

Robert J. Welday, Chemical Technologist, Arthur H. Thomas Co., Philadelphia, Pennsylvania, a 1942 graduate of Allegheny College.

John M. Tuttle, Chief Engineer, Glassine and McDowell Mills, Glassine Paper Co., West Conshohocken, Pennsylvania, a 1917 graduate of the University of Illinois.

Frederick M. Viles, Assistant Physicist, Hollingsworth & Whitney Co., Waterville, Maine, a 1943 graduate of the University of Maine.

A. John Winchester, Chief Chemist, Price Brothers & Co. Ltd., Jonquiere, P. Q., Canada, a 1942 graduate of the University of Manitoba.

Modern Methods of Feedwater Conditioning For High Pressure Boiler Plants*

By S. D. Distelhorst[1]

Abstract

The advantages derived from the use of a boiler feed water having the following general characteristics, namely, zero hardness, low total solids, low silica concentration, and low and controllable alkalinities, are given.

Precipitation type softness of the single-stage and two-stage design, and exchange equipment of the standard zeolite type, and the new demineralizer for water treatment are discussed.

The increasing use by industry of high pressure boilers operating at 900 to 2000 p.s.i. has required water conditioning engineers to continually improve on equipment design to meet the exacting requirements of these steam generators. The net results are increased water treatment efficiencies for all pressures.

Desirable Chemical Characteristics of Water

In general, in the consideration of treatment of makeup water for steam generators, emphasis is placed on producing a water having in quality the following general chemical characteristics: zero hardness, low total solids, low concentration of silica, and low and controllable alkalinities.

Zero Hardness

Zero hardness is desired in order to eliminate every possibility of sludge formation in the boiler. A definition of zero hardness goes further than "zero hardness by the soap test," the general requirement being a hardness of the order of 1 p.p.m. or less by gravimetric analysis irrespective of the type of water conditioning system selected. For example, although a zeolite softener generally delivers an effluent of zero hardness by the soap test, engineers are now specifying zero hardness by titration with 3 drops of Boutron and Boudet soap solution rather than the customary 4 drops, which could correspond to a hardness of the order of 1 p.p.m. or less by gravimetric analysis.

In high pressure generators operating at high ratings, it is often found that continuity of operation is of paramount importance; particularly is this true in the case of topping plants where there is installed a single steam generator and a single turbine. The outage of either the boiler or the turbine will dictate the economy of the combination. Generally speaking, turbo generators can be operated continuously for years without outage, and the tendency is similarly to operate boilers without internal cleaning for a year or more. In one particular case an industrial plant operating 1400 p.s.i. boilers has found it to be economical to install a large water conditioning system to reduce the hardness in condensate initially present to the extent of only 5 p.p.m. Previous to installation of the water conditioning system, this small amount of hardness was precipitated internally by phosphate, which caused sludge accumulations in the boilers and required their cleaning every 6 months. With installation of the water conditioning equipment, these same boilers operated continuously for years without internal cleaning and evaporated 1 million pounds of water per square foot of boiler surface before being shut down for inspection; it was found that cleaning was not necessary.

Low Total Solids

With regard to total solids concentration, the desire on the part of engineers at present is the same as heretofore: to provide a makeup water that approaches distilled water as nearly as possible, taking into account the economy of treatment. The low total solids are desirable from the standpoint of minimizing blow-down loss and also reducing solids carryover in the steam so as to alleviate or avoid entirely deposits of turbine-blades which interfere with efficiency and capacity of generating equipment.

Silica

It is particularly true with high pressure boiler plants operating at pressures of the order of 1200 to 2000 p.s.i.g. that much attention is focused on the conceneration of silica in the boiler water, for it is generally conceded that silica, even in low concentrations, is apt to volatilize, be carried over with the steam and solidify on turbine-blades, causing loss of capacity and efficiency, and requiring cleaning or washing with the aid of chemicals, such as caustic soda.

Since all waters contain silica to some degree, often in a quantity that would bring about a prohibitive concentration of silica in the boiler concentrate, much attention is now being directed to the reduction of this silica. For example, specifications are being issued by engineers to water conditioning manufacturers stipulating a maximum silica concentration in boiler concentrates of 5 p.p.m. This means that some method of silica reduction is mandatory, because generally speaking, even good water supplies will contain silica of approximately 5 p.p.m. on an average, and if a plant is designed on the basis of a 5 or 10% blowdown of the makeup water, then the concentration of silica in the boiler concentrate will be twenty or ten times, accumulating to an extent of 100 or 50 p.p.m.—far in excess of the stipulated specifications. It is, therefore, quite obvious that some method of silica reduction must be incorporated in the feed water conditioning equipment, and it is rare that this is not given a priority in the conditioning of water for boilers operating at very high pressures.

While silica is not always detrimental from the standpoint of scale formation, being alleviated by the presence of the phosphate radical, which permits its accumulation to a fairly high concentration without danger of scale formation, however, such high quantities of silica are nevertheless detrimental from the standpoint of turbine-blade deposition.

Low Alkalinities

Although it is very common with low pressure boilers to operate with boiler water alkalinities of 300

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[1] Cochrane Corp., Philadelphia, Pa.

to 1000 p.p.m., the alkalinities permitted in the high pressure steam generators are ordinarily 150 p.p.m. or less. In many cases the alkalinities are not permitted to exceed 100 p.p.m. This is desirable because low alkalinities produce a sufficiently high pH value to protect the boilers against corrosion, and any reduction in alkalinity over that necessary to prevent corrosion simply adds to the total solids, increases the blowdown schedule and is likely to increase the carry-over tendencies of the boiler concentrate.

While much emphasis has been placed heretofore on the type and extent of alkalinity from the standpoint of boiler plate embrittlement, this is not now the case, undoubtedly due to the general use of welded drums.

All of these chemical properties of a boiler feedwater should be obtained with the minimum investment in equipment and cost of chemical treatment, including supervision of operation. Obviously, there is no single type apparatus that can meet all of these qualifications best, because of the wide variety of physical and chemical characteristics of water available. However, to meet these objectives there are a number of general types of equipment that are available, which, when properly selected and coordinated, will produce a satisfactory water supply and may even approach distilled water under some conditions.

In general the two major classifications of equipment are the precipitation type and ion exchange.

The precipitation type of softener may be utilized singly or in combination with the ion exchange type of unit, and, while the classifications as to the apparatus and combinations of apparatus might involve a long list, it is sufficient for the purpose of this paper to mention three types which are in common usage for the preparation of boiler feed waters:

1. Single and two-stage phosphate hot process water softeners.

2. Carbonaceous or resinous ion exchange zeolite utilizing the sodium cycle or combination of the acid and sodium regenerations.

3. Demineralization with silica ion exchange equipment.

All of these types of softeners have been applied or are contemplated for application to water conditioning for boilers operating at pressures as high as 1400 p.s.i.g., and one installation is under construction to prepare a large percentage of makeup for boilers operating at 2000 p.s.i.g.

Hot Process Water Softener—Single-Stage Unit

For waters that are comparatively soft and relatively low in alkalinity, having a hardness less than 50 p.p.m., the hot process water softener utilizing phosphate as the precipitating reagent has worked out remarkably well. Many units are in service conditioning relatively soft water either initially clear or containing considerable suspended matter, as from surface supplies. To obtain the alkalinity control that is desired, phosphoric acid is generally recommended as the chemical reagent being introduced into the water supply ahead of the hot process softener, immediately followed by heating and deaeration of the water for discharge of oxygen and carbon dioxide generated by the acid. Following the deaerating process an alkali, such as caustic soda, is added to raise the pH value to the order of 9.7 to 10 to bring about the optimum environment for the precipitation of calcium phosphate and magnesium hydroxide. It is interesting to note that this process has resulted in a very soft water, not only of zero hardness by the soap test, but generally containing only a fraction of a part per million hardness as determined by quantitative laboratory procedures. On one installation the hardness measurement on a large volume sample of treated water showed a hardness reduction of 0.07 p.p.m. This process reduces the hardness to such infinitesimal values that the boiler concentrate is generally crystal clear, devoid of every vestage of sludge, and of low alkalinity.

In common with all types of precipitation softeners, the effluent from the sedimentation chamber and filters is saturated with the precipitate under the conditions of operation, so that in a 100% makeup plant if this water is passed through economizers there may be some tendency for further precipitation of the remanent hardness under the higher temperature conditions, because the calcium phosphate is less soluble at the higher temperatures.

In order to avoid such deposition, treatment of the effluent from such a unit with phosphoric or sulphuric acid to reduce the pH value to the order of 8.5 is generally recommended.

The Two-Stage Softener

For relatively high hardness waters the phosphate softener is operated in two stages, the bulk of the hardness being first reduced by the cheaper lime and soda ash reagents to approximately 15 to 25 p.p.m. This water is then delivered to a second sedimentation tank, where the remanent hardness is precipitated by a phosphate reagent, such as disodium phosphate or phosphoric acid. Following this process the water is filtered and then delivered to the boilers. The process of deaeration can follow the softening process or can be made an integral part of the softener sedimentation tank. This type of equipment is particularly advantageous where large quantities of dirty water are available for boiler feed, as the hot process sedimentation tank not only provides for softening by precipitation, but also for coagulation of the suspended matter without the addition of coagulents ordinarily necessary in clarifying plants. The precipitation of the hardness itself is sufficient to coagulate the suspended water in most water supplies.

With the two-stage softeners, silica can be reduced by the lime and soda reactions if the initial hardness contains an appreciable quantity of magnesium salts; otherwise magnesium is added by the substitution of dolomitic lime for lime, the former having a sufficient magnesium oxide content to serve the purpose of absorbing silica. To make this magnesium oxide content more effective, sludge is recirculated from the sludge cone to the top of the sedimentation tank, and, in all such cases, equipment is designed to reduce the silica to the order of 0.5 to 1 p.p.m. In addition to recirculation of sludge, the sedimentation tanks are equipped with a mechanically-operated stirring mechanism which causes rapid growth of the floc and more effective sedimentation to provide a water of unusual clarity for the second stage, thus avoiding an intermediate step of filtration.

Zeolite Softener

The development of the carbonaceous and the resinous types of ion exchangers has displaced entirely the use of greensand and synthetic silicious zeolites in zeolite water conditioning processes for high pressure boiler plants. The reason is obvious, in that neither the carbonaceous, or the resinous exchangers contain silica, avoiding the possibility of

silica pick-up, which is present if the natural or silica-gel types of ion exchangers are used.

In addition to this advantage, these types of materials are such that they can be regenerated with acids without suffering deterioration, making it possible to control alkalinities through the ion exchange process. It is well known that zeolite softeners operate on the basis of exchanging the ions of calcium and magnesium in the water for ion of sodium of the zeolite mineral.

With nonsilicious zeolites, regeneration of the material by acid, permits exchange of calcium, magnesium, and sodium ions in the raw water supply with the equivalent hydrogen ion of the exchanger, so that all of the raw water alkalinity is converted to carbon dioxide, which can be disengaged easily from the water by means of an aerating tower. The sulphates and chlorides are converted to the equivalent quantities of sulphuric and hydrochloric acid, which can be neutralized by the effluent from a sodium exchanger producing sodium bicarbonate from the bicarbonate of calcium and magnesium. Thus, by blending waters from two such treatments alkalinity is regulated at will.

Following this treatment, the water should be deaerated, then given a supplementary treatment of phosphate to counteract the remanent hardness, which may be of the order of 1 p.p.m.

A number of high pressure boiler plants have utilized this method of treatment very effectively and it is particularly well-adapted to the treatment of soft, clear waters with low silica concentration. Zeolite treatment, being an ion-exchange process by its very nature does not reduce silica, since the bulk of silica present in water is not in the ionized form and, therefore, is unreactive.

For turbid waters, or waters that are high in hardness, the zeolite process should be preceded by a means of clarification and filtration. If clarification is necessary, it is customary to combine the softening process with clarification in a modern design cold-process apparatus such as the Rapid Reactor or Precipitator, which, by very liberal circulation of sludge, reduces hardness to a relatively low degree with economical use of lime and soda ash. Following this treatment, the remanent hardness is removed by the use of a carbonaceous zeolite softener operated on the sodium cycle.

Demineralization

One of the most recent developments in the water conditioning art is the demineralizing plant for the removal of all ionized materials. This process has been applied more generally to process industries requiring a means of preparing an economical substitute for distilled water. While the demineralization process involves a chemical cost higher than either the precipitation type or the zeolite type softeners it is nevertheless much more economical than distillation and is finding a very ready market. Thus the pharmaceutical and chemical industries are finding many applications for this method of water conditioning. Obviously, since the aim in condition water is to approach the quality of distilled water, one would expect that the demineralizing process would find acceptance in boiler plants. However, it must be considered that not only is the chemical quality of the water a guide in equipment selection, the cost of the equipment and cost of its operation, and in this category the demineralization process is the most expensive of all methods of water conditioning other than evaporation.

Silica, being un-ionized, passes through the exchanger unchanged. The acid effluent is then passed through an acid adsorber, a synthetic resin, whereby acids other than carbon dioxide are absorbed to produce an effluent for many purposes equivalent to distilled water, containing only silica, a few parts per million of alkalinity, and a trace of chlorides and sulphates. The carbon dioxide is disengaged from the water by passage over a decarbonating tower.

In the previous part of this paper, particular attention was called to silica concentrations. Since the demineralizing process as such does not remove silica, this constituent becomes of extreme importance in connection with the demineralization process, because the water is low in total solids, permitting low blowdown, so that even small quantities of silica in the raw water supply may accumulate to relatively large quantities in the boiler concentrate. For example, with demineralized water blowdown requirements may be reduced to the order of 1%, whereby the boiler concentrate will be 100 times as concentrated as the treated makeup water, and if the raw water contains only 2 p.p.m. of silica, then the silica concentration would build up to 200 p.p.m., which obviously is over the permissible limit. Therefore the demineralizing process must be supplemented by means of silica removal by either of two methods: (1) By adsorption using magnesium oxide and caustic soda or (2) By treatment with hydrofluoric acid or its equivalent and subsequent ion exchange.

The first method involves the installation of a hot process softener, following the ion exchange units, in which magnesium oxide is introduced into the sedimentation tank along with a small amount of caustic soda to give the proper pH value. With recirculation of the magnesium hydroxide sludge, silica can be reduced to low quantities. This water then should, of course, be followed by filtration then supplementary phosphate treatment to the boilers. It is obvious that such an arrangement involves the extensive combination of equipment, so that this system is not generally recommended in view of the more economical procedure of softening and removal of silica in the single sedimentation tank through the use of a phosphate-type hot process softener.

Still in the stage of development is the method of removing silica by ion exchange which can be accomplished in the demineralizing process by modification to standard equipment. There are a number of methods which can be followed, but the principal one is the introduction to the raw water supply of sodium fluoride which, when subject to the action of the cation exchanger, is converted to hydrofluoric acid. The hydrofluoric acid passes along with the other acids to the anion exchanger unit and is adsorbed. As such, it has the ability to react with silica in solution, forming fluosilic acid, H_2SiF_6. Thus the silica is adsorbed. Experimental plants have indicated that silica can be reduced by this means to the order of 0.25 p.p.m.

This process, however, complicates considerably, the operation of the equipment, the process requiring the acid adsorber to be regenerated first by an acid salt in order to discharge the silica from the adsorber bed. The use of an alkali at this stage would precipitate the silica as SiO_2. Following the initial regeneration of the adsorber, secondary regeneration is undertaken using an alkali, such as soda ash or

caustic soda, for discharge of the remaining acids, such as sulphuric and hydrochloric acid. After rinsing, the unit is again ready for acid adsorption and silica removal.

This process of silica removal is rather expensive and, coupled with the complete demineralization process, the chemical costs involved are far greater than the zeolite or the hot process softener, and is the principal objection to the general application of this process for boiler feed service. However, a 500 g.p.m. unit is to be placed into service shortly in Texas in which well water of high silica and mineral content is to be completely demineralized for boiler feed make-up. The plant is not selected on the basis of economy, but chiefly for the purpose of research development of the process and the resins.

A second plant is now scheduled to be constructed having a capacity of 2000 g.p.m. to prepare Lake Huron water for 1400 p.s.i.g. boilers.

It is quite apparent that the available processes require rather critical examination and analysis of the conditions for which they may be contemplated, and the final selection of the proper water conditioning process must be made with infinite care if the optimum results at the most economical costs are to be obtained.

The objectives sought can be obtained by any one of the three general processes discussed, but the principal influence in final selection is the capital investment and the cost for operation of each. It would be folly to select equipment on any basis that would ignore these fundamentals, and it would be impossible to lay down any fast rule as to where this process or that process may be best applied; that must be left to the judgment of one experienced in the art.

Industrial Quality Control

An introduction to industrial statistics and quality control by Paul Peach has recently been published by Edwards & Broughton Co., Raleigh, N. C.—2nd Ed. 1947. Paul Peach is recognized among industrial statisticians and quality control engineers as an engaging lecturer with a rare sense of humor. His personality comes through well in print. He also has the ability to reduce elusive statistical concepts to practical operating instructions. Consequently, this book is of value as a text for the neophyte and as a handbook for the practicing quality engineer. Since

It is characteristic of the paper industry that most qualities of its products are either expressed in measurements, or not expressed at all. Its well established systems for control of processes, specifications and inspection of raw materials and reporting of quality data depend on measurement alone. Operating experiments are conducted following the same principles, with data collected and analyzed as though laboratory control were exercised over the unmeasured variables. There are few, if any, "Go - No Go" gages in a paper mill. As a consequence of emphasis on measurement, those portions of Mr. Peach's book dealing with acceptance sampling plans and control charts for attributes will be irrelevant until the industry forces its thinking to fit such quality description techniques. A few mills are using "attributes" to advantage, to judge from published work.

More than half of the book deals with methods of analyzing and interpreting of "variables" data. Methods of process control, specification, inspection and experimentation involving measured variables are treated therein. Before these methods are directly applicable to paper mill situations, adjustments need to be mode. Statistical methods require data on process and product variability as well as level of quality. Often the additional information is available in an existing mill system, but is not considered and eventually is lost especially when an average is reported. To keep the information, reporting of variability in terms of standard deviation, variance or range is desirable. Such a step is a first step, necessarily a difficult one, but it must be taken if subsequent use is to be made of quality control and other statistical technique. Technical people who can see and deal with variability in their processes and products have a tremendous advantage over those who do not see it or who can't cope with it when they do. Mr. Peach describes methods of making estimates of variability and using the estimates in problems of inference. Most of this exposition is elementary; the practitioner will necessarily have to read extensively in other works listed in "Suggestions for Advanced Study."

In preparing statistical texts, writers seem to be universally plagued with the problem of symbols. Mr. Peach follows the system used in "leading journals", "Sx" being read "Summation of X" and "s" a sample standard deviation. Both letters reappear under the discussion of "Sequential Sampling" wherein they take on different meanings. "D_4" appears as a factor in calculating control chart limits on the range and as an acceptance number in sequential sampling. Neither of these cases is alarming, but here and there a student may become confused in what is otherwise an orderly presentation.

In addition, is seems that in his efforts to "talk down" to the shop man, Mr. Peach has over-simplified the material for technically trained people. A few of these: "Student's t-test is a two-tail test"; "Regression deals with the fitting of lines or curves to a set of points on a graph"; "Since variances can be added they can be averaged."

Some methods of analysis which have proved extremely helpful in quality control and in experimentation were noted as absent: Analysis of Runs, the Sign test, tests for randomness based on intraclass correlation, regression, correlation, contingency, and analysis of variance in multiple factor experiments. Most of these omissions are essentially refinements of methods outlined, but are perhaps more easily adaptable in paper mills, where single tests are made on individual lots of material and where complexes of interactions make "controlled" process experiments impossible.

Were this reviewer engaged in a piece part or assembly plant, a plant where dimensional control was important, Mr. Peach's book would be considered a contribution to quality engineering. Through contact with several engineers in such plants, the book is known to find daily use. In a paper mill, however, it must be considered as part of an ever-widening statistical literature, a part of usefulness when the problem at hand falls in the area treated by the book. It is useful insofar as a mathematical model of a paper mill situation has correspondence to one built around a repetitive process making discrete things, the quality characteristics of which are described by attributes or variables methods. Many mill problems can be so rationalized. Many cannot, and it is these that need the more refined, more specialized methods beyond the scope of Paul Peach's work.

A. P. BELLINGHAUSEN

Microiodometric Method for the Determination of Glue or Gelatin in Paper*

By G. E. Naponen[1], M. J. Dries[2] and A. S. O'Brien[2]

Abstract

A simple microiodometric method for the determination of organic nitrogen is proposed. The distinct advantages of the new method over the regular Kjeldahl method with regard to speed, apparatus, and technique required, are pointed out. The method involves the destruction of the organic matter by hydrogen peroxide and sulphuric acid, followed by the oxidation of the resulting ammonium ions to nitrogen by an excess of hypobromite in slightly alkaline medium. The excess of hypobromite is back-titrated with a standard sodium thiosulphate solution after the addition of potassium iodide and acid.

The two most important features of the new procedure are:

1. In the destruction of the organic matter with 30% hydrogen peroxide the sample is first soaked with hydrogen peroxide and then treated with sulphuric acid, rather than the usual procedure of adding the hydrogen peroxide to hot sulphuric acid.

2. The relatively unstable sodium hypobromite solution is replaced by two solutions, a hypochlorite and a potassium bromide solution, which are both added to the digested sample at the time of analysis.

In recent years micro Kjeldahl methods have received the attention of many chemists who have wanted to develop a method to estimate organic nitrogen on smaller samples and in less time than is required by the macro method. Although successful micro methods have been proposed they have the objection of requiring special apparatus and technique not available in all analytical laboratories.

An obvious simplification of the Kjeldahl method would be a modification in which the distillation process could be eliminated. According to S. Morgulis and A. F. Friedman *(9)* the application of the hypobromite method for ammonia *(1, 4, 6, 12)* directly to Kjeldahl digestion mixtures leads to erroneous results. This has been confirmed by the authors using three common catalysts; mercury, copper sulphate, and selenium. Few attempts *(10, 11, 13)* have been made to use catalysts which would not interfere in the subsequent iodometric determination of ammonia. Of these investigations the most thorough one is that of H. H. Williard and W. E. Cake *(13)*. Their method has the disadvantages that no appreciable saving in time of digestion is possible, the conditions for the hypobromite ammonia reaction are not controlled well enough to yield reliable results and the reagent, sodium hypobromite, is too unstable to be of much practical value. A fairly complete review of the literature on this method is given by Bradstreet *(2)* and more recently the work of Levy and Palmer *(7)* and that of Ling *(8)* should be noted.

The use of perhydrol (30% hydrogen peroxide) as a reagent to shorten the clearing time of Kjeldahl digestion mixtures has been known for some time. The usual procedure is to add the peroxide in small portions to the hot digestion solution until it clears up. During some experiments with catalysts for a micro Kjeldahl digestion of samples of paper the writers added hydrogen peroxide to the paper first and then added concentrated sulphuric acid. An effervescent reaction, which subsided in 5 to 10 seconds., yielded a water clear solution in which all of the organic nitrogen in the gelatin in the paper occurred as ammonium sulphate. The reaction mixtures were analyzed for ammonia by a modification of the hypobromite method of Kolthoff and Stenger *(5)* in which the unstable hypobromite solution is replaced by a hypochlorite solution. Hypochlorite solutions have been shown to be quite stable at a ph of 13.1 *(3)*. Hypochlorite is converted to hypobromite upon the addition of potassium bromide. The oxidation of ammonia proceeds according to the following equation:

$$(NH_4)_2SO_4 + 3\,NaOBr \rightarrow N_2 + 3\,NaBr + H_2SO_4 + 3\,H_2O$$

A. *Sodium Hypochlorite.* A 0.1 *N* stock solution is prepared by bubbling 3.5 gram of chlorine gas into 1 liter of water containing 8 gram of sodium hydroxide. Portions of the stock solution are diluted with water to approximately 0.02*N*. The hypochlorite solution should be kept in colored glass stoppered bottles.

B. *Potassium Bromide—Sodium Bicarbonate.* 50 grams each of C.P. potassium bromide and sodium bicarbonate are dissolved in water to make 1 liter.

C. *Sodium Thiosulphate.* 0.01*N* thiosulphate (solution) is prepared from the C.P. salt and standardized. The solution is stabilized by the addition of 0.2 grams of Na_2CO_3 per liter.

D. *Methyl Red.* A 0.2% water solution of the sodium salt of methyl red is used. Alcoholic solutions should not be used.

E. *Other Reagents.* The other reagents, perhydrol (30% hydrogen peroxide), concentrated sulphuric acid, 6*N* sodium hydroxide, and 6*N* sulphuric acid are of C.P. grade.

Procedure

An approximately 0.1 gram sample of paper is weighed accordingly (to ±0.0001g.) and put into a 125 ml. Erlenmeyer flask, 1 ml. of 30% hydrogen peroxide and 2 ml. of concentrated sulphuric acid are slowly added. After the paper has dissolved (5 to 10 seconds) the flask is heated strongly for 3 minutes on a hot plate. The reaction mixture is then cooled and diluted with 50 ml. of water. The solution is neutralized with 6*N* sodium hydroxide using one drop of methyl red as the indicator. Immediately after the neutralization 10 ml. of potassium bromide- sodium bicarbonate solution are added and the contents of the flask are cooled to room temperature. A reproducible volume (about 10 ml.) of 0.02*N* sodium hypochlorite is added. After at least 5 minutes, but preferably not more than 10 minutes, the solution is treated with 0.1 to 0.2g of potassium iodide and 5 ml. of 6*N* sulphuric acid. The liberated iodine is titrated with standardized 0.01*N* sodium thiosulphate using starch as an indicator.

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[1] Minnesota Mining Co., St. Paul, Minn.; formerly Eastman Kodak Co., Rochester, N. Y.

[2] Paper Service Department, Eastman Kodak Co., Rochester 4, N. Y.

A blank experiment is run exactly the same way. The difference in the volumes of sodium thiosulphate required in the blank and in the analysis is equal to the thiosulphate which is equivalent to the available ammonia in the sample. The per cent of gelatin or glue in the paper is calculated as follows:

$$\frac{\frac{V}{1000} \times N \times 1/3 \times 14 \times 5.6}{W} \times 100 = \% \text{ gelatin or glue in paper}$$

where: V = ml. of $Na_2S_2O_3$ equivalent to the NH_3
N = normality of the $Na_2S_2O_3$
W = weight of the sample

In order to simplify the calculations, the terms

$$\frac{N}{1000} \times 1/3 \times 14 \times 5.6 \text{ can be combined and used as a factor.}$$

NOTES.

1—The hot plate used to heat the reaction mixtures should be at such a temperature that at the end of the 3 minute heating period the concentrated sulphuric acid is condensing in heavy streams high on the walls of the flask. If the flask is not heated hot enough, unreliable results will be obtained.
2—The neutralization with 6N sodium hydroxide should be to within 1 to 2 drops of the base. A large excess of base will cause the reaction between the ammonia and the hypobromite to go beyond free nitrogen to oxides of nitrogen.
3—The sulphuric acid should be added slowly to the hydrogen peroxide-soaked paper, or difficulty may be encountered in getting complete digestion.
4—Potassium iodide and acid should not be added to more than one flask at a time, and the titration with thiosulphate should then be made without delay.

Ten samples of paper containing varying amounts of glue were analyzed by the new iodometric procedure and in some cases by the classical Kjeldahl method. The data are summarized in Table I.

The new method was also applied to several samples of flour and wheat. The results, along with those obtained by the Kjeldahl procedure, appear in Table II.

Discussion

The results which have been obtained with the microiodometric method for organic nitrogen seem to be just as accurate as those obtained by the Kjeldahl method (Tables I and II). As far as analytical technique that is required to operate the procedures, there is little difference. The authors have given the method to several analysts who were not familiar with the procedure and they were able to get satisfactory nitrogen values in the first attempts. The new micro method does not require equipment that is not found in any analytical laboratory. This should be an important factor for laboratories which are planning to begin the determination of organic nitrogen. A complete Kjeldahl installation suitable for routine analysis is quite expensive. As far as the time factor is concerned, it has been found that in the analysis of papers there is a saving of at least half an hour for each set of twelve samples when the micro method is used. In the case of analysis of single samples of

TABLE I.—RESULTS OBTAINED FOR GLUE IN PAPER WITH THE MICROIODOMETRIC PROCEDURE WITH COMPARATIVE RESULTS OBTAINED WITH THE MACRO KJELDAHL METHOD

Sample	Glue in Paper, %	
	Micro Method	Kjeldahl Method
1	2.34	...
	2.31	...
	2.27	...
	2.32	...
	2.30	...
	2.34	...
2	4.01	...
	3.94	...
	3.93	...
	3.96	...
	4.10	...
	4.03	...
	4.06	...
	3.94	...
	3.94	...
	3.96	...
	4.01	...
	4.00	...
	3.98	...
	4.01	...
	4.00	...
3	2.50	2.54
	2.47	2.52
4	3.79	3.88
	3.75	3.81
5	1.15	1.06
	1.11	1.10
6	3.73	3.70
	3.77	3.71
7	2.82	2.80
	2.81	...
8	2.06	2.11
	2.08	...
9	2.87	2.71
	2.89	...
10	2.28	2.25
	2.25	...

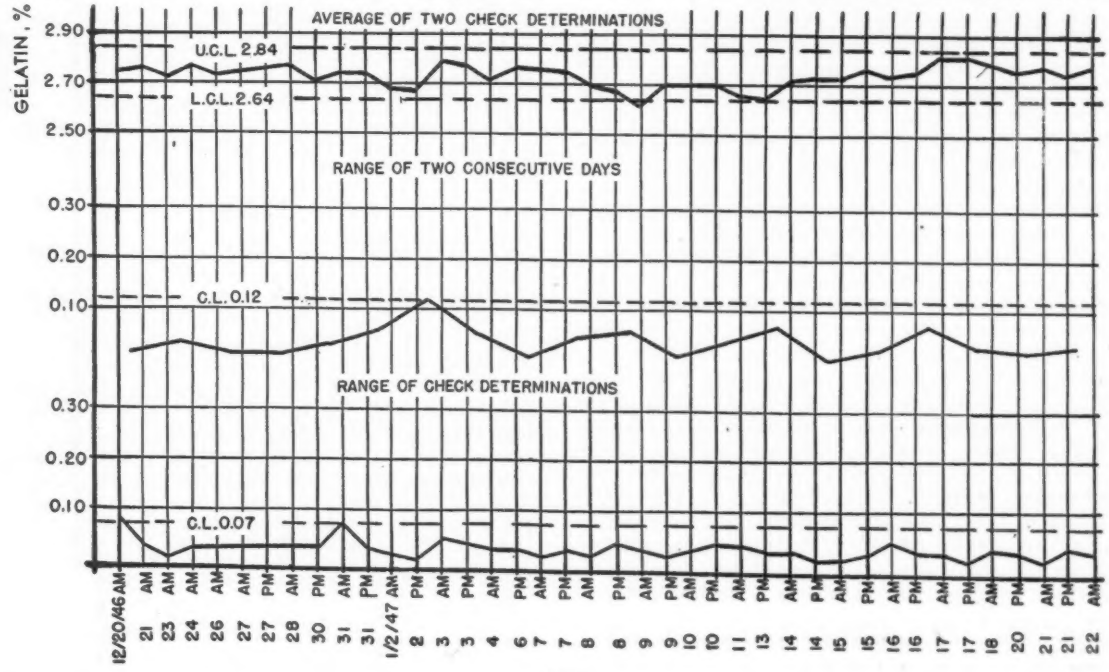

FIG. 1
Summary of Data on Test of Precision

TABLE II.—RESULTS OBTAINED ON FLOURS AND WHEATS

The iodometric method was modified as follows to handle 0.1 gram samples:

1. 2 ml. instead of 1 ml. of perhydrol was used.
2. Approximately 0.08*N* sodium hypochlorite and 0.035*N* sodium thiosulphate was employed.
3. A protein factor of 5.7 was used in the calculations.

Sample	Protein in Sample, %	
	Micro Method	Kjeldahl Method
Low protein flour	7.97	8.30
	8.00	8.14
	8.02	....
	8.00	....
Medium protein flour	13.00	13.00
	12.90	13.00
	12.89	....
	12.88	....
High protein flour	15.48	....
	15.45	15.50
	15.41	15.40
	15.44	....
Low protein wheat	9.33	....
	9.26	9.41
	9.30	9.30
	9.25	....
Medium protein wheat	14.40	....
	14.40	14.30
	14.48	14.40
	14.60	....
High protein wheat	15.50	....
	15.60	15.92
	15.58	15.75
	15.71	....

paper the micro procedure takes 15 minutes as compared to 1½ hours for the Kjeldahl methods.

As far as a comparison between the microiodometric and micro Kjeldahl methods is concerned, the above mentioned advantages still hold although to a lesser degree. The microiodometric method, however, is applicable to smaller samples than is the micro Kjeldahl procedure. The Kjeldahl is limited by the fact that in an acidimetric titration each molecule of ammonia is equal to 1 equivalent of the acid used. In the iodometric method each molecule contains 3 equivalents. This means that in the analysis of the same amount of nitrogen, the volume of 0.01*N* thiosulphate in the iodometric method would be three times as great as the volume of 0.01*N* acid in the Kjeldahl method. Moreover, the end point in an iodometric titration with 0.01 thiosulphate is more reliable than that obtained in the titration of 0.01*N* acids.

Precision and Accuracy

One sample of paper has been analyzed forty times in duplicate over a period of approximately 1 month. These values along with the averages, the ranges of check determinations, and the ranges for two consecutive days are given in Table III. The data are plotted on Fig. 1. The control limits were calculated by formulas suggested by Wernimont *(14)* in his article on "The Use of Control Charts in the Analytical Laboratory."

The study showed that the average value for the glue content of this particular paper was 2.74% and that any individual value which is the average of duplicate checks between 2.64 and 2.84% must be looked upon as in "statistical control," or acceptable using the new iodometric method. It should be added that all the data reported in Table III were obtained by one operator.

Another series of eighty cross checks between the new method and the Kjeldahl procedure showed that there was no tendency for the iodometric method to yield either higher or lower results. In fact, the average difference between the new and classical procedure for the eighty paper samples was 0.002% gelatin, which is obviously negligible.

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TABLE III.—DAY TO DAY CHECKS ON THE GLUE CONTENT OF STANDARD SAMPLE OF PAPER

Date		Check Determinations	Av. of Two Check Determinations	Range of 2 Consecutive Days	Range of Check Determinations
12–20–46	A.M.	2.71			
		2.79	2.75		0.08
21	A.M.	2.77			
		2.75	2.76	0.01	0.02
23	A.M.	2.73			
		2.73	2.73		0.00
24	A.M.	2.75			
		2.77	2.76	0.03	0.02
26	A.M.	2.75			
		2.73	2.74		0.02
27	A.M.	2.76			
		2.74	2.75	0.01	0.02
27	P.M.	2.77			
		2.75	2.76		0.02
28	A.M.	2.78			
		2.76	2.77	0.01	0.02
30	P.M.	2.72			
		2.70	2.71		0.02
31	A.M.	2.78			
		2.71	2.74	0.03	0.07
31	P.M.	2.75			
		2.73	2.74		0.02
1–2–47	A.M.	2.69			
		2.68	2.68	0.06	0.01
2	P.M.	2.67			
		2.67	2.67		0.00
3	A.M.	2.77			
		2.81	2.79	0.12	0.04
3	P.M.	2.77			
		2.80	2.78		0.03
4	A.M.	2.72			
		2.74	2.73	0.05	0.02
6	P.M.	2.78			
		2.76	2.77		0.02
7	A.M.	2.76			
		2.75	2.76	0.01	0.01
7	P.M.	2.76			
		2.74	2.75		0.02
8	A.M.	2.71			
		2.70	2.70	0.05	0.01
8	P.M.	2.67			
		2.70	2.68		0.03
9	A.M.	2.61			
		2.63	2.62	0.06	0.02
9	P.M.	2.71			
		2.70	2.70		0.01
10	A.M.	2.72			
		2.70	2.71	0.01	0.02
10	P.M.	2.72			
		2.69	2.70		0.03
11	A.M.	2.65			
		2.68	2.66	0.04	0.03
13	P.M.	2.64			
		2.66	2.65		0.02
14	A.M.	2.71			
		2.73	2.72	0.07	0.02
14	P.M.	2.73			
		2.73	2.73		0.00
15	A.M.	2.73			
		2.73	2.73	0.00	0.00
15	P.M.	2.77			
		2.76	2.76		0.01
16	A.M.	2.72			
		2.76	2.74	0.02	0.04
16	P.M.	2.74			
		2.76	2.75		0.02
17	A.M.	2.81			
		2.83	2.82	0.07	0.02
17	P.M.	2.82			
		2.82	2.82		0.00
18	A.M.	2.80			
		2.78	2.79	0.03	0.02
20	P.M.	2.76			
		2.74	2.75		0.02
21	A.M.	2.77			
		2.77	2.77	0.02	0.00
21	P.M.	2.73			
		2.76	2.74		0.03
22	A.M.	2.76			
		2.78	2.77	0.03	0.02
$\bar{\bar{X}}$			2.74		
$\bar{R}a$				0.037	
$\bar{R}c$					0.021

Control limits for average of two check determinations

$= \bar{\bar{X}} \pm I_2 \bar{R}a = 2.74 \pm (2.66 \times 0.037) =$ 2.84 U.C.L. / 2.64 L.C.L.

Control limits for range of 2 consecutive days

$= D_3 \bar{R}a$ to $D_4 \bar{R}a = 0$ to $3.27 \times 0.037 = 0.12$

Control limits for range of two check determinations

$= D_3 \bar{R}c$ to $D_4 \bar{R}c = 0$ to $3.27 \times 0.021 = 0.07$

U.C.L. = Upper control limit. L.C.L. = Lower control limit. $\bar{R}a$ = Average range of two consecutive days. $\bar{R}c$ = Average range of check determinations. $\bar{\bar{X}}$ = Grand average.

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An Outline of the Insulation Board Industry*

By Carl G. Muench[1]

Abstract

Practically every kind of material that is light in weight and has some strength has been used or is still being used as protection against heat and cold. These include materials such as sawdust, straw, cornstalks, vegetable fibers such as wood and bagasse, mineral fibers such as asbestos and glass wool, and also natural mineral materials such as pumice, diatomaceous earth, and vermiculite.

The equipment required to manufacture insulation board includes (1) pulping units, (2) board machines, (3) drying equipment, and (4) finishing and packaging equipment.

The subject of insulation has been much in the public eye in recent years with the increasing emphasis on comfort in the modern home, office, and factory, and especially in view of the economics involved in the use of air conditioning and acoustics. Many have had sufficient contact with the manufacture of insulation board to have gained considerable knowledge as to the extent of the industry; all have undoubtedly seen the growth of this comparatively new industry during the past 25 years. It has much similarity to papermaking, both in the manufacture and merchandising, as well as in the plant and machinery. It is gratifying to note that the Technical Association has taken cognizance of this industry and it is hoped that this introductory paper will be followed by others dealing with the manufacturing processes, equipment, and the problems of the industry.

Insulation is another example of the old adage that there is nothing new under the sun, for Mother Nature anticipated man's needs for protection against heat and cold. The purpose of any thermal insulating material is to keep heat where it is wanted. Fibrous types of materials seem to be most extensively used for this purpose as by nature they embody and entrap millions of minute air cells which aid in resisting the passage of heat. Birds with their feathers and mammals with fur enjoy built-in insulation, and the fluffy, fibrous structures of both feathers and fur serve as efficient insulators around these animate heat generating units.

Before the dawn of recorded history prehistoric man discovered that animals could furnish him with something besides food, namely protection against the cold, and he adopted the practice of making a protective covering from their furs, a practice which is still the height of fashion today.

Early man also conceived the idea of insulation in the construction of his shelters, and at widely separated points on the globe shelters are found of a type designed to act either to keep heat in or out. The Eskimos built their ingenuous snow igloos, while the native of the tropics built palm thatched huts. The hut made of turf was a common form of habitation in Europe, as well as in America.

With the advent of a more civilized social system, man still had comfort in mind when he constructed his home. Thick walls of heavy stone and brick with straw thatched roofs were used to provide both warmth in winter and comfort in summer.

In Sweden and Norway it is found that in home construction blocks of dried peat were used for insulation in wall construction. Adobe mud and straw walls are still being used in the southwestern part of the United States and in some foreign countries.

Practically every kind of material that is light in weight and has some strength has been used, or is still being used as protection against heat and cold. This includes materials such as sawdust, straw, cornstalks, vegetable fibers such as wood and bagasse; cork; plumose fibers such as cotton and kapoc; mineral fibers such as asbestos and glass wool, and also natural mineral materials such as pumice, diatomaceous earth and vermiculite.

Development of Insulation Materials

With the increasing industrialization of the country it was natural to expect that the manufacture of products designed especially for thermal insulation would be undertaken. Probably the first commercial materials in this field were the quilt insulations, intended primarily for home insulation, and the cork block insulations intended for cold storage plants. Cabot's Quilt was among the first insulating materials to be commercially manufactured and merchandised and consisted of a batt formed of dried eel grass stitched between two layers of strong paper and packaged in roll form. Linofelt, manufactured by the Union Fiber Company, was a similar product except that it had a layer of batted flax fiber as a filler between two sheets of paper. Hair Felt, another product, was made from a felted mat of cattle hair stitched between layers of paper. These products were made in various thicknesses and could be supplied with different kinds of paper covering for specific purposes. Large quantities of quilt insulations were used for insulating refrigerator cars and household refrigerators, as well as residences. The physical properties of these quilts, however, restricted their use to application between walls where they were not exposed to view. The block insulations such as Corkboard and Lith were limited in use almost exclusively to cold storage insulation.

The first semirigid insulation felt that did not depend on paper for strength and support was invented by James E. Lappen around 1907 and manufactured in a small way at LeRoy, Minnesota. About 1910 the plant and process was purchased by the Bohn Refrigerator Company who then constructed a large up-to-date plant at Midway, between St. Paul and Minneapolis, and manufactured the product which they called Flaxlinum. The raw material for Flaxinum was flax straw left over from flax seed growing in Minnesota and Dakota. This was first put through breaker rolls, converted into flax tow, then cooked in rotary boilers with a small percentage of caustic soda, after which it was shredded apart and felted by hand on a crude, continuous type of machine The squeezed-out sheets were cut to length, placed on racks which were loaded onto trucks and dried in a kiln type of drier. The

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drying time was approximately 30 hours at a temperature of around 160° F. The resulting product was of a coarse, brown, fibrous texture with considerable strength that required no paper backing. This was, however, not a rigid board and could not be used as an interior finish, or as a base for plaster.

Later on the Union Fiber Company at Winona, Minnesota, produced a similar product called Fiberfelt. Both of these companies ceased manufacturing these felt products when they were superceded by the board form insulation which served many other purposes besides insulation.

Insulite

In 1914 the author assembled a pilot operation at the large Minnesota & Ontario Paper Company plant at International Falls for the manufacture of an insulation board from groundwood and sulphite screenings. Patents on the product, process, and the machine for manufacturing were applied for and granted to him about that time. This small operation probably produced the first rigid type insulation board as it is known today. The characteristics and appearance of the boards being manufactured today have been much improved, but in general they are very similar to this first board which was called Insulite. In 1916 a larger plant was constructed at International Falls having a capacity of around 60,000 sq. ft. per day.

The first felting machine built and operated to make Insulite consisted of a long traveling wire, similar to a fourdrinier machine, except that it moved uphill and had a top wire and press rolls to squeeze out the excess moisture. The second machine built was of a different design and consisted of a large diameter wire cylinder mold with a wire screen and rolls operating as a press on the top exposed surface to reduce the moisture content of the board. Improved machines embodying these same basic principles are being used today for the manufacture of insulation board in many plants.

Shortly after the larger Insulite plant was put into production the United States entered the first world war and Insulite became much in demand for cantonments and many other types of buildings that the government had to erect quickly. For the period of the war almost the entire production was shipped out for governmental use. Rigid insulation board, under these first large scale tests, was eminently satisfactory and proved its usefulness as sheathing, interior finish, and also as a temporary roof.

Needless to say there were many trials and tribulations in the beginning as the machinery for production was of a special nature and no one had much experience in the problems of machinery design and production. Since these early days many improvements have been made in both machinery and product besides an enormous increase in capacity.

Ten-Test

At about this same time Mr. Manley Chew up at Penetanguishene, Ontario, was making a board from coarse ground pulp formed in a screen bottom mold and then pressed to the required thickness, after which the board was removed from the mold and then dried in a kiln. This board, called Ten-Test, was considerably denser and heavier than Insulite and required further sanding to bring it to uniform thickness. The operations were moved to Midland after a fire in 1922, and about 1927 the International Paper Company took over the entire operation and constructed a new mill at Gatineau, Quebec, where Ten-Test is now being manufactured in large quantities in a modern plant.

The Minnesota & Ontario Paper Company, due to the extensive paper and lumber business they enjoyed and on which they were concentrating, were somewhat remiss in promoting the possibilities of insulation board. Their last expansion took place after Celotex and some other companies had, through extensive advertising and merchandising, more or less paved the way and demonstrated the potential possibilities of insulation board.

Celotex

In 1920 a group headed by Mr. Bror Dahlberg and others, including the author, after considerable experimental work and a careful investigation and study of raw materials, etc., organized The Celotex Company and decided to build a plant in Louisiana for the manufacture of an insulation board to be made from sugar cane fiber called bagasse. One board machine and drier, having a capacity of 150,000 sq. ft: a day, was put into operation in 1921, and this was followed by two more machines in 1923. An extensive advertising and merchandising program disclosed that there was a tremendous market for insulation board and Celotex' success in merchandising their board was followed by many of the building products manufacturers and allied companies erecting board plants and entering the market.

Masonite

Shortly after Celotex got into operation William B. Mason, while working on a method to produce a fibrous pulp from wood, invented what is now called Masonite. All know the phenomenal growth of the Masonite Company which followed. Whereas insulation board is being manufactured by many different companies in many plants in the United States, hardboard, due to patent protection, is being manufactured almost exclusively by the Masonite Corporation.

Process of Manufacture

To manufacture an insulation board the first requisite of course is an ample supply of raw materials and at a reasonable cost. At the present time the following raw materials are being used: pulpwood of various varieties, cereal straw; corn stalks; sugar cane bagasse; licorice root; palmetto and banana stalks. Practically any material that can be reduced to a fibrous pulp can be processed to use as the base for making board insulation. Some materials naturally are better suited than others. Wood, on account of its availability almost any place is probably used in larger quantities than any other fiber; also it produces, when mechanically disintegrated, a light-color board.

For manufacturing insulation board new types of machines have been developed, as well as modifications and changes in machinery already in existence. There are in general four types of apparatus used in a board plant: 1st—the equipment necessary for producing the pulp, 2nd—the board machine and all its auxiliaries for felting and forming the continuous sheet, 3rd—the drying machine with its loading and unloading devices, 4th—the equipment for trimming, fabricating, packaging, etc.

Various types of apparatus are used in breaking down the fibers and refining them to the proper size for felting into a board, and consist of machines such as grinders, shredders, defibrators, beaters, claflins,

jordans, disk refiners, etc. Some raw materials must be given a slight preliminary cooking to soften and saturate them, while others require none.

For the formation of the pulp into a sheet various types of machines are being used, all of them however reproduce continuously the same action that is obtained by draining a low consistency pulp on a wire screen mold. The comparatively long fibers are felted together into a matted mass and when pressed to remove excess water, and dried, cohere, and form a strong rigid board. The density of insulation board will usually be around 1¼ pound per sq. ft., 1 inch thick, and have a thermal conductivity of about 0.33 B.t.u. per sq. ft. per degree difference Fahrenheit per hour.

There are three general types of machines for the formation of board in general use today; one machine consists of two wire covered cylinders upon which the pulp sheet is formed. This soft sheet emerges from the nip between the two rolls and is further pressed between rolls before being dried. The suction type mold roll such as built by the Oliver Filter Company, consists of a large suction wire covered roll followed by presses. The fourdrinier type machine is equipped with a top wire and followed by presses, such as built by Downingtown Manufacturing Company and some of the other paper machinery manufacturers. All of the board forming machines will produce sheets of various thicknesses and of varying densities, depending on the character of the fiber and the pressure on the press rolls. The moisture content of the board coming from the forming machine and going to the drier will vary from 50 to 75%.

Driers are of different designs and makes and vary depending considerably on the type of fuel available. Practically all of the modern driers are of the multiple deck type with moving rollers supporting the sheets. Some are heated by steam in coils, others are direct fired with natural gas, and some use coal with an indirect type of heater. The type of driers used in 1910 required 36 hours to dry ½ inch board, whereas today in the Celotex plant, they are drying ½ inch board in 50 minutes. Temperatures of 180° were considered high, while today they run up as high as 700° at the wet end. The subject of driers and drying is exceedingly interesting and would make an interesting paper for some future TAPPI meeting.

The fabrication of insulation board has made great advances from the time the first boards were marketed. Back in the 20's when insulation board came out of the drier and was trimmed to standard size it was considered to be finished and ready for shipment. Any subsequent fabrication had to be done by the purchaser. Today, however, the largest amount of labor in most insulation board plants is required for further processing after the big board comes out of the drier. This is required for the production of special surface finishes, colors, beveling, drilling, kerfing, laminating, special packaging, etc. These are all necessary and standard operations to prepare the board for direct use by the customer. In addition to this type of fabrication some plants have complete additional processes to impregnate the board with asphalt, put on asphalt and granule surfaces, make it into exterior brick siding so that the products may be suitable for outside use and exposure to the weather. In addition large quantities of board are drilled, kerfed, painted, and treated in other ways for use as acoustical correction. This, in some plants, is an extremely large part of the business, and the manufacture of acoustical board is almost a complete industry in itself requiring not only special fabrication and machinery, but also special painting and finishing.

Industry Economics

The growth of the insulation board industry during the past 25 years has risen from a production of a few million feet per year to billions of feet. In addition to the large number of very successful insulation board plants in the United States and Canada there are many scattered over the entire world. Sweden has many plants and produces a large volume each year. In addition to this there are plants in Norway, Finland, England, Germany, Italy, Switzerland, Russia, Formosa, Australia, New Zealand, and the Hawaiian Islands that are operating. Insulation board, and especially Celotex, has been so widely distributed over the entire world that most of the small countries are aware of its value in building construction and are making plans for constructing both insulation board and hardboard plants. At the present moment there are plants proposed for Ireland, South Africa, India, Brazil, Argentine, Mexico, Colombia, and undoubtedly other places.

Almost 2 billion sq. ft. of insulation board was produced in the United States during the year 1946, and a general expansion of the industry of about 25% is taking place at the present time. The Scandinavian countries produce about 400 million sq. ft. per year and they are expanding their manufacturing facilities. Most of the Scandinavian production will be consumed in the rehabilitation of Europe and Russia.

In view of the tremendous shortage of housing facilities in this country and in the devastated area of Europe, it appears that the insulation board industry will have to meet an unparalleled demand for its products. Even when new plant capacities are available it is expected that it will still be difficult to satisfy the demands of the construction industry. The building trade will help to lead the procession in the reconversion from war to the peace time effort and construction activities will continue for many years to play an important part in the economics not only of the United States but of the entire world.

As to the future of insulation board it must be admitted that it is exceedingly bright and that the next 5 or 10 years will see tremendous advances in the types of products produced and offered for sale. Research is constantly being carried on by the manufacturers, and improved and new materials have been and are being developed, and these will continue to appear on the market. With the developments made in the fields of paint, lacquer, plastics, and metallurgy, many new materials have become available for use in connection with the manufacturing and finishing of insulation boards. These materials used in combination with board will result in new and interesting types of finishes better suited for interior and exterior finishing of houses, thereby effecting a savings in cost, labor, and time.

A great many of the processes and techniques used in the manufacture of insulation boards are modifications of procedures followed in the paper and pulp industry, and it is particularly pleasing to know that the Technical Association of the Pulp and Paper Industry has recognized this in the formation of special committees which will devote their attention to this industry. It is certain that much mutual gain will be realized as a result of this constructive step.